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SEVENTH ANNUAL REPORT

PROCEEDINGS

Oregon State Horticultural Society

THIRTIETH ANNUAL MEETING

CORVALLIS, OREGON
November 16, 17, 18, 1915

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SEVENTH ANNUAL REPORT

PROCEEDINGS

OF THE

THIRTIETH ANNUAL MEETING

OF THE

OREGON STATE HORTICULTURAL SOCIETY

HELD NOVEMBER 16, 17, 18, 1915
CORVALLIS, OREGON

ORGANIZED 1885
INCORPORATED 1909

1859

PORTLAND, OREGON
METROPOLITAN PRINTING COMPANY
1916

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OREGON STATE HORTICULTURAL SOCIETY

OFFICERS

Col. R. C. Washburn, President, Central Point
B. W. Johnson, Vice-President, Corvallis
C. D. Minton, Secretary-Treasurer, Portland

BOARD OF TRUSTEES

A. P. Bateham, One Year, Portland
Albert Brownell, Two Years, Portland
Chas. McNary, Three Years, Salem

AUDITING COMMITTEE

Albert Brownell
C. A. Burt
F. W. Power

COMMITTEE ON NEEDED LEGISLATION

A. P. Bateham, Chairman, Portland
Chas. McNary, Salem
E. C. Roberts, Lebanon
Dr. C. A. Macrum, Mosier
M. McDonald, Orenco

HONORARY MEMBERS

Atwell, H. C. (1911), Forest Grove
Cardwell, Dr. J. R. (1897), Oregonian Bldg., Portland.
Dosch, Henry E. (1911), Hillsdale, Portland
Lake, E. R. (1892), Pomological Dept., Washington, D. C.
Lambert, J. H.* (1895), Portland
Luelling, Seth* (1895), Milwaukie
Miller, H. B. (1911), 509 E. 21st St. N., Portland
Smith, E. L. (1911), Hood River
Starr, James E.* (1893), Portland

*Deceased.

LIFE MEMBERS

Anderson, Nils P., McMinnville
Armstrong, E. C., Salem
Bateham, A. P., Portland
Better Fruits Pub. Co., E. H. Shepard, Hood River
Bridge Horticultural Society, Bridge, Coos County
Brownell, Albert, Exchange Bldg., Third and Yamhill, Portland
Brumfield, J. T., Portland
Bryant, Hub., Albany
Carter, J. L., Hood River
Central Horticultural Society, Coquille
Chase, W. E., West Ave. and E. Burnside, Mt. Tabor, Portland
Clark, L. E., Hood River
Coos Bay Fruit Growers' Association, Marshfield
Cordley, A. B., Dean, O. A. C., Corvallis
Daugherty, Otis Ray, R. F. D. No. 1, Molalla
Davidson, Frank L., Hood River
Davidson, P. S., Hood River
Eggert, Mrs. Fred'k, 265 14th St., Portland
Esterly, H. M., Yeon Bldg., Portland
Fanning, A. M., Sheridan
Fargo, G. K., 83 Fifth St., Portland
Forbis, John F., Dilley
Goodrich, A. C.,* Yamhill
Groner, Ferdinand, R. F. D. No. 2, Hillsboro
Holaday, Asa, Scappoose
Holt, J. O., Mgr., Eugene Fruit Growers' Association, Eugene
Howe, Ed L., Multnomah Hotel, Portland
Laidlaw, W. A.. 1515 Belmont St., Portland
McCargar, C. A., Yeon Bldg., Portland
McDonald, M., Oregon Nursery Company, Orenco
McGill, A., Beck Bldg., Portland

Macrum, C. A., care of Portland Hotel, Portland
Mason, Julius L., Hood River
Meier, Julius L., care Meier & Frank, Portland
Minton, C. D., Portland
Moulton, L. D., McMinnville
Myrtle Point Horticultural Society, Myrtle Point
Newell, W. K., Gaston
Park, Chas. A., Salem
Pemberton, Jno., Salem
Pilkington, J. B., Portland
Power, Frank W., Oregon Nursery Co., Orenco
Rees, J. H., Springbrook
Reynolds, L. T., Salem
Roberts, E. C., Lebanon
Rumbaugh, H. G., Albany
Settlemeier, Frank W., Woodburn
*Deceased, 1914.
Swallow, C. W., R. D. No. 3, 118, Oregon City
Wallace, F. W., McMinnville
Weber, R. H., The Dalles
Westerlund, J. A., Medford
Williamson, H. M., Sec'y State Board of Horticulture, 303 Henry Building, Portland
Williamson, W. E., Portland

ANNUAL MEMBERS, 1916

Amoth, H. L., Newberg
Allen, A. C., Medford
Allen, Prof. R. W., Hermiston
Barss, Prof. H. P., Corvallis
Beckwith, S. V., Medford
Brown, Prof. W. S., Corvallis
Bohrnsteadt, A. C., Salem
Clark, W. D., Central Point
Cooley, S. D., Roseburg
Currin, C. J., Monroe
Canby, W. W., Grants Pass
Carlton, Edwin W., Medford
Chase, A. C., Cresswell
Chase, F. B., Eugene
Dearborn, G. A., Dundee
Dreier, W. C., Rio Piedras, Porto Rico
Ewing, R. M., Dallas
Fisher, Fred, Roseburg
Funk, H. G, Sheridan
Gardner, Col. Cornelius, 740 Sherwood Drive
Gardner, Prof. V. R., Corvallis
George, Judge M. C., Portland
Herbert, Mrs S., Melaine
Hall, Joseph, Newberg
Hurd, G. S., Stanfield
Hopkins, F. H., Central Point
Hollis, F. W., Medford
Jessup, J. M., Cook's, Wash.
Johnson, B. W., Corvallis
Jorgensen, N. C., Salem, R. D. 9
Leis, B., Beaverton
Lewis, Prof. C. I., Corvallis
McNary, Judge C. L.
Merriman, C. A., Eugene
Marsh, George, Roseburg
Otis, L. S., Newberg
Parsons, Regnald, Seattle, Wash.
Paulus, Robert, Salem
Pomeroy, J. W., Scappoose
Purdy, Edna, Orenco
Querry, H. F., Medford
Reimers, F. C., Talent
Rumbaugh, D. W., Albany
Scarborough, L. D., Eugene
Seaquist, Alfred L., Portland
Sibson, Wm. S., Portland
Smith, W. G., Wolf Creek
Stout, M. A., Sheridan
Stout, E. C., Sheridan
Strong, Fred, Roseburg
Scott, John M., Portland
Stokes, Wm. R., Portland
Washburn, Col. R. C., Central Point
Witherspoon, H. A., Elgin
Weed, Howard Everett, Beaverton

DELINQUENT MEMBERS, 1916

Anderson, Bert, Medford
Ashpole, Wig, Medford
Ambercombie, A. W., Medford
Ahren, W. M., Medford
Aitkins, H. S., Medford
Alford, W. L., Medford
Bardwell, Ralph, Medford
Bennett, N. S., Medford
Burkett, J. F., Grants Pass
Bleckner, W. L., Grants Pass
Barnhill, O. H., Ashland
Bagley, W. R., Talent
Brayton, W. E., Central Point
Brown, S. L., Medford
Brown, Ed., Medford
Beliling, H. C., Medford
Bennett, A. D., Medford
Chase, M. C., Central Point
Campbell, J. P., Jacksonville, Florida
Carpenter, Geo. B., Medford
Clark, H. H., Central Point
Carpenter, Alfred S. V., Medford
Cooley, J. H., Medford
Crawford, Oris, Medford
Crego, R. E., Union Meat Co., Portland
Conner, Guy W., Medford
Corey, C. H., Medford
Colvig, Wm., Medford
Deuel, H. L. D., Medford
Deuel, F. K., Medford
Doth, John, Medford
Davidson, D. L., Medford
Dinsmore, James, 1997 Orchard Street, Eugene
Darby, Charles, R. F. D., Medford
Dunlap, A. J., Central Point
Doherty, B. A., Talent
Dorris, Geo. A., Springfield
Dean, A. H., Rex
Daniels, T. E., Medford
Diamond, J. W., Medford
Diamond, Fay E., Medford
Ewing, Margaret, Medford
Ewing, R. L., Medford
Elliott, T. C., Medford
Elsman, F. D., Grants Pass
Englehardt, Prof. C. E., Medford
Elmer, W. J., R. F. D. 4, Medford

Fifer, F. A., Medford
Foster, R. N., Medford
French, Lillian, Medford
Fuselman, J. E., Medford
Fengwald, C. Y., Medford
Fiers, A. Corno, Central Point
Gore, Wm. H., Medford
Gates, Geo. A., Medford
Gates, C. E., Medford
Griswold, W. H., Coast Culvert & Flume Co., Portland
Gregg, O. I., Medford
Gale, H. E., Merlin
Garnett, H. C., Medford
Hilton, George, R. F. D. 2, Medford
Henderson, Dr. M. P., Medford
Himes, George H., 207 2d St., Portland
Hyatt, F. G., Medford
Herd, C. C., 521 E. 40th N., Portland
Hale, J. F., Medford
Howe, Richard, Medford
Howard, H. D., Medford
Hubbard, A. C., Medford
Hubbard, F., Medford
Hargreaves, Dr. H. C., Medford
Johnson, J. G., 43 West St., Portland, Maine
Johnson, J. B., Medford
Johnson, John, Medford
Joy, B. F., Medford
Keene, Dr. J. M., Medford
Kidd, C. M., Medford
Klum, B. K., Medford
Knight, C. A., Medford
Lamport, E. H., Medford
Lawrence, John T., Medford
Layre, C. J., Medford
Letta, H. A., Medford
Lippincott, J. B. Co., Philadelphia, Pa.
Lowe, D. M., Ashland
Lowry, Bert B., Medford
Mann, J. C., Medford
Marienney, C. L., Medford
McGowan, W. H., Medford
Moler, Emil, Medford
McDonald, C. W., Medford
McBride H. D., Medford
Merrick, F. E., Medford
Miller, Maude, Medford
McCormick, A. C., Lebanon
Miksche, Leo J., Medford
Morgan, Wm., Medford
Morrison, E. M., Medford
Moss, H. M., Medford
Noe, C. F., Medford
Niles, Clyde E., Grants Pass
Norris, M. J., Medford
Nicholson, H. G., Medford
Pankey, C. B., Central Point
Paxson, R. H., Central Point
Putman, George, Medford
Perry, J. A., Medford
Palmer, E. N., Central Point
Powers, Prof. W. L., O. A. C., Corvallis
Juerry, H. F., Medford
Robinson, C. L., Forest Grove
Roberts, R. A., Lebanon
Richardson, S. T., Medford
Reicker, Elizabeth, Medford
Stokes, W. R., 453 Prescott St., Portland
Scott, John M., G. P. A., S. P., Portland
Shrock, Claude, Sutherlin
Sommerville, J. T., Medford
Sullivan, J. T., Medford
Schfidt, E. F., Medford
Scheffelin, Chas. S., Medford
Strong, Charles, Medford
Swern, P. M., Medford
Sumner, W. A., Medford
Stone, D. W., Medford
Snider, J. W., Medford
Springer, W., Medford
Sloam, H. W., Florence
Thomas, C. M., Talent
Thorne, F. W., Medford
Ticley, G. L., Medford
Uhlrich, Wm., Medford
Vater, W. L., Medford
Vater, Vernon, Medford
Vilas, J. F., Medford
Warner, Edna, Medford
Wilkinson, John J., Medford
Waters, R. W., Medford
Warner, Ed., Medford
Wortman, H. G., Medford
Wold, Jonas, Medford
Wood, D. R., Medford
Wood, H., Grants Pass
Wood, Douglas, Medford
Yost, Gus L., Medford

DELINQUENT MEMBERS, 1915-16

Ainsworth, Howard, Dundee
Allan, W. S., Dundee
Allen, Prof. R. W., Hermiston
Batchelder, J. F., Hood River
Beard, T. E., Route 3, Oregon City
Beardsley, A. F., Route 8, Salem
Beebe, J., Route 1, Eugene
Bradford, Prof. F. C., Corvallis
Brodie, R. C., Canby
Buchanan, J. A., 711 15th, Vancouver, Washington
Buff, F. W., Route 3, Hood River
Burtner, M. M., Newberg
Campbell, Dugald, Eugene
Campbell, J. N., Newberg
Campbell, S. J., Freewater
Carroll, John M., Mosier
Carroll, J. P., Mosier
Clark, H. J., Goldendale, Washington
Cooper, J. C., McMinnville
Crowell, H. E., Dundee
Cunningham, Bruce, Route 3, Salem
Cutler, A. B., Hood River
Devlin, J. H., 512 Royal Bldg., Portland
Dye, E. C., Oregon City
Eakin, H. C., Dallas
Elmer, O. H., Route 1, Mulino
Evans, F. E., Route 8, Salem
Ewing, F. C., Route 1, Salem
Fanno, O. R., Route 2, Milwaukie
Friebaugh, J. L., 512 Royal Bldg., Portland
Friebaugh, Mrs. J. L., 512 Royal Bldg., Portland
Friebaugh, Ruby, 512 Royal Bldg., Portland
Fowler, Mary E., Royal Bldg., Portland
Frewald, Gus, Oregon City
Freytage, O. E., Oregon City
Funk, H. G., Sheridan
Gilbert, L. M., Route 4, Salem
Graham, S. C., White Salmon, Washington
Harper, Theodore, Dundee

Hawkins, J. M., Albany
Hay, W. H., Newberg
Hesgard, G. N., Newberg
Holland, Christy, 512 Royal Bldg., Portland
Holtgrieve, C. E., R. F. D. 1, Box 989, Portland
Huntington, H. G., Barton
Jackson, Prof. H. S., Corvallis
Jeffries, T., Hood River
Johnson, J., Box 69, Eugene
Jones, Seymour, Salem
Keene, Dr. C. M., Silverton
Kerr, J. A., Corvallis
Kimball, S. P., Salem
Knapp, F. M., 495 E. 21st, Portland
Knoll, P. A., Mosier
LaFollette, Alex M., Salem
Linn, P. E., Estacada
McCoy, J. E., 313 Glenn Ave., Portland
Maguire, J. R., 787 Oregon St., Portland
Malboeuf, C. A., 410 Aspen St., Portland
Matten, E. E., Route 6, Salem
Matthews, E. W., 510 Spalding Bldg., Portland
Michener, C. C., Spalding Bldg., Portland
Miller, Kenneth C., Sheridan
Mumford, Mrs. A. N., 573 Washington St., Portland
Nelson, Milton O., Troutdale
Norton, Frank J., Sutherlin
Palmer, L. L., Vernon, B. C.
Porter, J. C., Hood River
Powell, Ira C., Monmouth
Prince, Thos., Dundee
Quarnberg, A. A. Vancouver, Washington
Reburn, W. W., McMinnville
Ritz, H. C., Hood River
Roberts, H. A., Cheltopo Apts., Portland
Robinson, David, Mosier
Rupert, A., Worcester Bldg., Portland
Russell, L. M., McMinnville
Schultz, J. M., Estacada
Shepard, Jas. R., Roosevelt, Washington
Silver, W. W., Newberg
Snyder, D. A., Dayton
Stackland, Karl J., Cove
Standish, P. F., Estacada
Stangel, J. J., Woodburn
Stansberry, J. E., 582 Windsor, Portland
Stewart, Fred S., Salem
Stewart, C. E., Cottage Grove
Stockton, R. V., Sheridan
Tinker, Geo. H., Corvallis
Thompkins, W. A., 21 E. 81st St., Portland
Thompson, C. D., Hood River
Vaale, P. O., Sheridan
Weeks, Geo. W., Route 8, Salem
Wendell, C. O., 303 Henry Bldg., Portland
Whisler, C. E., Medford
Wilson, Prof. H. F., Corvallis
Withycombe, Thos., 432 12th St., Portland
Withycombe, Wm. R., Gaston
Worsley, Ben S., Svensen
Worsley, Mrs. F. H., Svensen
Youmans, B. E., 512 Royal Bldg., Portland
Young, J. P., Eugene

AMENDED ARTICLES OF INCORPORATION

of the

OREGON HORTICULTURAL SOCIETY.

Know All Men by These Presents: That we, the undersigned, Homer C. Atwell, of the County of Washington; Frank W. Power, of the County of Multnomah, and James R. Shephard, of the County of Polk, all in the State of Oregon, being officers of the Oregon State Horticultural Society, unincorporated, and having been duly elected to the respective offices hereinafter specified, in accordance with the usages and regulations of said Society, do hereby associate ourselves together for the purpose of incorporation, under and by virtue of the general corporation laws of the State of Oregon, relative to religious, literary, benevolent, charitable and similar societies; and we do make, subscribe and adopt, in triplicate, these articles of incorporation, to-wit:

1. The name assumed by this corporation, and by which name it shall be known, is Oregon State Horticultural Society; and its duration shall be unlimited.

2, The object, business and pursuit of this corporation is, and shall be as follows: (1) The development of agriculture and especially of those branches known as horticulture, floriculture, arboriculture, and forestry; (2) the development of landscape gardening, and of all arts, sciences and instrumentalities likely to elevate the character of the rural population and increase the profits, comforts and pleasures of rural life; (3) the collection, preservation and dissemination of knowledge relative to the foregoing and other kindred subjects; (4) the exploitation and development of all agencies tending to conserve the natural resources of the country, and to arouse the public to an interest in such conservations; (5) to acquire, own, hold, use, sell, and otherwise dispose of and convey real and personal property; to accept, receive and use gifts, devices, legacies, bequests, and legislative appropriations; to borrow money, and execute therefor its promissory notes, mortgages, and other assurances; (6) to do any and all other acts and things which may be necessary, advisable or convenient, for the purpose of more effectually accomplishing the purposes aforesaid, or any of them.

3. The estimated value of the property and money possessed by said society at this time is one hundred dollars; and the sources of its revenue or income is, and will be, dues of its members, subscriptions, donations, devises, legacies, bequests and legislative appropriations, and any income which may be derived from the investment or use of any moneys or property so acquired.

4. The respective titles of the officers making these articles are as follows: Homer C. Atwell, president; Frank W. Power, secretary-treasurer, and James R. Shephard, vice-president. They shall hold their respective offices until their successors therein shall be duly elected and qualified. Their successors in office shall be elected by a majority vote of the members of said Oregon State Horticultural Society who are in good standing and present, and voting, at an annual meeting of said society on the first Tuesday of December, 1909; and on such other day and month of each succeeding year thereafter as may be designated in

the by-laws of said society as the date of its annual meeting, said annual meetings to be held in the City of Portland, Oregon.

5. The location of said Society shall be in said City of Portland, in the County of Multnomah, and State of Oregon.

HOMER C. ATWELL, President,
J. R. SHEPARD, Vice-President,
FRANK W. POWER, Secretary-Treasurer.

We, the undersigned, A. P. Bateham, President; E. H. Shepard, Vice-President, and Frank W. Power, Secretary-Treasurer of the Oregon State Horticultural Society, certify that at the annual meeting of the Society held November 16, 1911, the following resolution was unanimously adopted:

Resolved, That the officers take the necessary steps to file amended Articles of Incorporation placing the legal powers of the Society in the officers and three trustees, in place of the officers alone, as at present.

In accordance with said resolution the following to be known as Section 6 in the Articles of Incorporation will be appended as the amendment thereto:

"Section 6. The management of the affairs of the Society shall be vested in the president, vice-president and secretary-treasurer and three trustees. They shall be elected at the annual meeting each year, which shall be held at such time as may from time to time be fixed by the by-laws. The officers and trustees shall hold office for such time as provided from time to time in the by-laws."

Signed in triplicate and sealed with the seal of the Society this fifteenth day of October, 1912.

A. P. BATEHAM, President,
E. H. SHEPHARD, Vice-President,
FRANK W. POWER, Secretary-Treasurer.

Acknowledged before Notary Public.

AMENDED BY-LAWS OF THE OREGON STATE HORTICULTURAL SOCIETY.

(Adopted November 20, 1912)

ARTICLE I—THE SOCIETY YEAR

The Society year shall begin on the first day of January.

ARTICLE II—MEMBERSHIP

Section 1. The membership of the Society shall consist of annual, life and honorary members.

Section 2. Any person who shall pay the annual membership fee of one dollar shall thereby become a member for the current year, ending with the opening of the next annual meeting.

Section 3. Any person who shall pay the life membership fee of ten dollars shall thereby become a life member and shall be excused from further payment of membership fees.

Section 4. Any person who in the opinion of the Society has done the society or horticulture in general some especially valuable service may be elected to honorary membership by a two-thirds vote of the members present at any regular meeting and shall be excused from payment of all membership fees.

Section 5. Those who were honorary members before the incorporation of this society shall continue to be considered honorary members, without further action of the Society.

Section 6. All members shall be entitled to the same rights and privileges.

ARTICLE III—OFFICERS

Section 1. The officers of this Society shall be a president, a vice-president, and a secretary-treasurer and three trustees. The last four shall be under bond in such sum as the Society may desirnate, for the faithful discharge of his duties.

Section 2. The president and secretary shall be ex-officio members of all committees, except the auditing committees.

Section 3. The duties of said officers shall be such as usually devolve upon like officers, in similar organizations; provided, that no bills shall be paid without the approval in writing of the president and secretary; and provided further, that a committee of three, to be chosen annually by the Society, shall audit all bills, reports and accounts and render a report thereon to the Society.

Section 4. The secretary shall, at each annual meeting, render a report showing:

First—The personal property of the Society in his hands.

Second—The irreducible funds, securities and bills receivable belonging to the Society, stating how such funds are invested, and the interest then accrued on the same and on the other securities and bills receivable. Said report shall cover all documents of permanent value or use.

Third—He each year shall render to the auditing committee a complete report of the cash receipts and disbursements for the preceding year and this report, together with the report of the auditing committee, shall be made a part of the proceedings and printed in the annual report.

Fourth—The premiums offered, and by whom offered, and what was the final disposition of same.

Section 5. The three trustees appointed by the Governor as a Board of Control of the State, appropriation, together with the president and secretary of the society, shall constitute an executive committee, which committee shall be empowered to transact any and all business of the society that may be necessary between meetings of this Society.

The executive committee shall from time to time fix the compensation of the secretary of this Society as they may deem the requirements of the office may justify.

ARTICLE IV—DATE OF ANNUAL MEETING

The annual meeting shall be held on such days in November or December of each year as the officers may, from year to year, designate. The officers shall be elected on the afternoon of the second day of the annual meeting. The president, vice-president and secretary-treasurer shall take charge of their office on the first day of January next following their election and hold office for one year, or until their successors are elected and qualified.

The trustees shall be chosen in accordance with the Act of the Legislature so long as an appropriation is given by the State, and unless otherwise provided therein shall hold office for three years. In case the Legislature shall fail to grant an appropriation in any year, the trustees shall be elected for three years by the Society.

ARTICLE V—OTHER MEETINGS

Section 1. Other meetings may be held at such times and places as the Society by vote at a previous meeting may designate.

Section 2. The president may call a special meeting at Portland by causing notice thereof to be mailed to each member at least five days previous thereto, such notice to state the object of such meeting.

Section 3. It shall be the duty of the president to call a special meeting whenever requested in writing so to do by fifteen or more members.

ARTICLE VI—PUBLICATIONS

Every member shall be entitled, without cost, to one copy of all official reports published by the Society.

ARTICLE VII—QUORUM

Nine members shall constitute a quorum for the transaction of business, but a less number may meet, call to order, and adjourn from time to time.

ARTICLE VIII—ORDER OF BUSINESS

The following order shall be observed as a guide in the transaction of business at the annual meeting of the Society:

1. Call to order and reading of minutes of previous meeting.
2. Reports of officers.
3. Reports of committees.
4. Unfinished business.
5. New business.

6. Election of officers.
7. Papers, addresses, etc.

ARTICLE IX—RULES OF PRACTICE

Roberts' Rules of Order shall govern the deliberations of the Society.

ARTICLE X—IRREDUCIBLE FUND

All life membership fees, together with the sum of $2,000.00 of the amount heretofore realized from the bequest of the late Cyrus E. Hoskins, the "Lambert Fund," and the "Cardwell Fund," shall be kept intact and invested on good security, so as to produce a revenue, if possible, and only said revenue shall be expended by the Society.

ARTICLE XI—PERSONAL PROPERTY

The secretary shall be the custodian of all badges, banners, dies, medals, blanks, books and other property of the Society of value or suitable for future use; and shall exact from his successor an itemized receipt for said property, when same is transferred.

ARTICLE XII—RECORD OF REPORTS

The annual reports of the officers and of the auditing committee and all reports relative to the finances, or property of the Society, or the disbursements of its funds, shall appear in full in the record of transactions, in the order of their filing with the secretary following the record of the meetings at which the reports were presented. The treasurer's report shall be made to the auditing committee showing a full report of receipts and disbursements and said report together with report of the auditing committee shall be made a part of the proceedings.

Said reports may either be pasted upon said record, or copied, in which latter case the copy shall be attested by the secretary.

ARTICLE XIII.

The executive committee may, if they deem it advisable, lend the assistance of the Society in any display of fruits and prpoducts of the State.

ARTICLE XIV—AMENDMENTS

New by-laws may be adopted and old ones changed or repealed by a two-thirds vote of the members present at any meeting; provided, notice of such proposed adoption, change or repeal shall have been given at the last previous meeting of the Society; and provided, further, that a vote to change or repeal Article X shall be by yeas and nays, recorded on the record book of the Society. Said vote shall be taken only at an annual meeting, and after due notice given at the annual meeting next preceding the same.

REPORT OF SECRETARY-TREASURER, C. D. MINTON.

To the Officers and Members of the Oregon State Horticultural Society: I herewith submit my first annual report to your body. After assuming the office of secretary I immediately prepared the reports of our last meeting and had them printed in time for the legislature and placed a copy upon the desk of each member of the legislature that they might see what the Society was doing. However, the occupant of the Governor's chair, evidently not understanding the real import of the Society, or at least not appreciating the work done by this body, informed the legislature that this society was a "vermi for appendix" upon the State Horticultural Board and that it should be "cut out" when the appropriations were made. Acting upon this suggestion the legislature made no appropriation for the printing of the minutes in the future and it is for this body to decide if the minutes shall be printed. There is at this time plenty of money to do this and with the interest which is due the Society before the close of the year same may be printed without impairing our financial standing.

There is now in the bank $1,126.48. To this may be added $138 interest which will be due upon the Newell note before the first of January, also interest amounting to $17.35 which will be due from the savings account.

There are $493.50 in the savings account which is only bringing the Society 3½ per cent. There are $1,126.48, much of which could be loaned for the Society until such time as same may be needed, that are upon open account and which are bringing nothing to the Society.

I would therefore recommend that this society order the minutes printed and pay for same until such time as we may get our appropriation again from the State.

That such funds as are on hand that are not now needed for the use of the Society be loaned at a better rate of interest upon approved security.

That this body appoint a legislative committee whose chief duty it is to have the appropriation for printing and mailing restored.

If this body should not have the minutes printed, that it order the secretary-treasurer to have a financial report printed and mailed to each of the members of the Society as soon after the first of the year as possible.

There are a number of the Foreign Market Reports on hand, although several hundred of them have been mailed out the past year.

There are also some of the 1914 meeting reports on hand, a copy of which may be obtained by any member who has not yet obtained one.

Respectfully submitted,
C. D. MINTON,
Secretary.

FINANCIAL REPORT

IRREDUCIBLE FUNDS

Lambert Fund	$ 100.00	
Hoskin Fund	2,000.00	
Cardwell Fund	218.50	
Life Membership Fund	525.00	
		$2,843.50
Above invested as follows:		
Mortgage W. K. Newell, 6 per cent	$2,300.00	
Note J. R. Cardwell, 6 per cent	50.00	
Ladd & Tilton Savings Bank, 3½ per cent	493.50	
		$2,843.50

GENERAL FUND RECEIPTS

Balance on hand last report	$1,121.87	
Interest on Savings for 1914	17.35	
Membership, 1915	19.00	
Membership, 1916	46.00	
Interest W. K. Newell	138.00	
Interest Savings for 1915	17.37	
		$1,359.59

DISBURSEMENTS

C. D. Minton, Bond for Secretary, Telephone, Freight, etc.	$ 18.24	
Thielsen & Rowland, Bond for A. P. Bateham, 1914.	10.00	
C. D. Minton, Envelopes	3.50	
Irwin Hodson, Badges	16.00	
Metropolitan Printing Co., Programs	18.85	
C. D. Minton, Sundry Expenses as per bills read	12.00	
Ladd & Tilton, Exchange	.05	
		$ 78.64
Balance		$1,280.95

Trial Balance of Oregon State Horticultural Society for the year 1915:

Cash on hands	$1,280.95	
Loss and Gain		$1,338.47
Lambert Fund		100.00
Hoskins Fund		2,000.00
Cardwell Fund		218.50
Life Memberships		525.00
Mortgages	2,300.00	
Savings, L. & T.	493.50	
Supplies	57.52	
Bills receivable	50.00	
	$4,181.97	$4,181.97

We, your committee, duly appointed to audit the books and accounts of Mr. C. D. Minton, the Secretary-Treasurer of the Oregon State Horticultural Society, hereby certify that we have this day carefully examined all books and records submitted to us and find the same in order in every respect covering the year ending December 31, 1915.

We also certify that the cash on hand, as shown by the Trial Balance, is on deposit with the Ladd & Tilton Bank.

ALBERT BROWNELL, Chairman,
E. A. BURT.

Dated: Portland, Oregon, Januuary 14, 1916.

Report of Meeting

Meeting called to order at 1:30 p. m. in the Horticultural hall of the College, President R. C. Washburn, presiding.

President W. J. Kerr of the College gave the address of welcome.

Address of Welcome, W. J. Kerr, President, O. A. C.

It is with very great pleasure I welcome the members of the State Horticultural Society to the college. We were very glad, through our representatives, to extend the invitation that your organization should hold this meeting here. Similar invitations have been extended to other societies, our idea being that the field of work covered by the Oregon Agricultural College, and the activities of these different organizations are such that we thought it might be of mutual advantage to have the meetings here. As I stated to a group of men this morning, while you are here, we shall be glad indeed to have you take the opportunity to go over the institution and look through our buildings. It will be our pleasure to show you as much of the institution as you have time to see while you are here.

We are very much interested in the work of your society, as in all similar organizations. The fruit industry is a very important industry in this state and in the entire Northwest. It is true there are problems yet unsolved in the development of this industry, and we must get it down on a basis which will give us maximum returns. That means that we must have the fruit industry on a strictly business-like basis. The time was when the waste in other fields was relatively as great as it is today in the field of horticulture. In some lines, as in live stock, the waste has been reduced to a minimum. We shall not realize the results desired, or achieve the success we are striving for, until we utilize all the fruits of the orchard. We must utilize everything.

Another question to be considered is the marketing of our products. I was glad to note the attention given this subject in the preparation of your program. This involves the question of organization. The fruit men realized early the importance of organization in order that the best prices might be obtained for the products of the orchard, yet I imagine there are some things still to accomplish in this direction before we shall achieve the ideal in producing, and particularly in marketing. We have a number of marketing agencies taking care of our fruit or attempting to sell it.

We have several interests in the state, such as the State Horticultural Society, the Nut Growers' Association, the Truck Gardeners' Association, and others, and it would seem to me that it would be a great advantage if these could be affiliated in some way and brought into closer relationship.

It is not my plan to keep you here for an address, or attempt one. You have your addresses prepared and are waiting to hear them.

Regarding the college, I might say, in addition to the general reference to the institution, that through our investigational work in different lines of agriculture carried on by the Experiment Station, the resident instructional staff, and the Extension Service, we are striving to help the state in every way we possibly can, and I want the Agricultural College to be of as great service to the state as it is within our power to be.

I again express pleasure in having you here, and I want you to know that you are welcome, and that we shall be pleased to assist you in every way possible.

Response by President Washburn: As president of the society, I wish to thank you for your very cordial welcome and interesting words of comfort.

I hoped that we might hold this meeting under more auspicious skies. When we had our meeting in Portland two years ago, it rained, and when we brought it to the Rogue River Valley, it rained—and if it rains here, the impression may go abroad throughout the state that this society holds meetings only in wet towns. This is not the case. I want to say, that wet or dry, we are very glad to be here.

I think it particularly fortunate that we are here, because we fruit growers are trying to keep in touch with your institution. There are many problems always arising, and I think we all appreciate the advantage not only of having the members of your faculty address us, but we also appreciate the opportunity of presenting to them, personally, some of our vexing problems that constantly confront us, such as spraying, irrigation, soil treatment, etc.

I can assure you that we horticulturists are a very honest crowd, and when we leave the city you will find everything intact.

I am sure our meeting will be interesting, profitable, and valuable to us all. I thank you sincerely.

Mr. Chas. Park, president of the State Board of Horticulture, not being present, his address was read by Mr. Minton.

GREETINGS FROM THE STATE BOARD OF HORTICULTURE

By Chas. A. Park, President

I appear before you this morning to extend greetings from the State Board of Horticulture to the Oregon State Horticultural Society assembled for its thirtieth annual meeting.

The Oregon State Horticultural Society, in its beginning, was organized by such men as Dr. Cardwell, Hon. Henry E. Dosch, Hon. H. B. Miller, Hon. E. L. Smith. These men, while engaged primarily in other pursuits, realized that the production of fruit would be one of Oregon's profitable resources, and from their personal experience, knew that the fruit grower had many problems to solve before one hundred per cent perfect fruit could be produced. They came together to discuss their trials and tribulations, to relate their experiences, to narrate their failures and their successes. They had the welfare of the fruit grower at heart. Their discussions were free and open to everybody for guidance and profit.

I wish to congratulate the Oregon State Horticultural Society for steadfastly maintaining the altruistic purpose which prompted its organization—a purpose which brings representative fruit growers of the State together to exchange experiences, to promote the welfare of Hortculture at large, and not to serve any individual selfish interest.

The State Board of Horticulture is here today to extend its hearty co-operation in all things for the common weal. I thank you.

Response of A. P. Bateham, Ex-President of the Society

The State Horticultural Society cordially reciprocates the greetings of the State Board of Horticulture. The members of this Society feel that the State Commissioners of Horticulture are their representatives.

The inception of the State Board of Horticulture was in the State Horticultural Society, and the principal features of the existing state laws in regard to horticulture were instigated and furthered by this society.

It is both natural and desirable that there should be close harmony between the two bodies and we are gratified to see all of the State Horticultural Commissioners in attendance at this meeting.

If you feel that you need stronger public sentiment to sustain your acts or to accomplish what you feel should be done, tell us and let us help you. If this society at any time gives expression to desires for possible improvements in either existing laws or their enforcement we trust this will not be taken amiss, but in a cordial spirit of co-operation, for the work that is entrusted to you is of vital importance to all of us.

President Washburn: The State Board of Horticulture was a creation of this society. We all have a great deal of use for them. Their inspectors are the police of the fruit world in Oregon. We can tell our troubles to the police, and we expect them to keep peace between the bugs and our fruit. Whatever degree of success they have, is our success also, and we are glad to co-operate with them. We are glad they are here.

If some of our fruit growers are not here, they have good and sufficient reasons for their absence. If they are not here, I think I know where they are. They are at the front. They are suffering in the trenches. Did it ever occur to you that war and the fruit grower are very much alike? Great Britain, France, Austria, Russia, Germany and Italy are fighting. But they are not the only people fighting. Haven't we been fighting? Haven't we been fighting three, four and five years? Haven't we been fighting scale, frost, the codling moth, aphis, blight, and other innumerable things? However, we are still alive and after the battle we are going to live. There is another similarity about the war that occurs to me. There is a great deal of uncertainty as to who is going to win. Are the allies going to win, or are the Germans going to win? Is the fruit grower going to win, or is the victory going to be with short crops and low prices? Now, if we are not going to win, why not? This is one reason why we are here today—to determine whether we are going to be able to live. That question has got to be thrashed out, and I think we can do it. We can make an attempt at it anyway. What is the cause of this uncertainty and depression? One thing we are going to determine is whether it is the fault of the grower or the seller. Is it the growing end or the selling end? So far as the growing end is concerned, I think we have progressed steadily. We know a great deal more than we did. When I first went to the Rogue River Valley ten years ago, I thought—ten years hence—I would be going to these meetings in my private car. I see now I was mistaken. As a matter of fact, I had to sell a couple of hogs in order to meet the expenses of my trip to Corvallis, and if there are only two or three heroes here from the Rogue River Valley, it is probably because the others down there are shy on hogs.

I don't want to be called a pessimist. I am an optimist. Ask anyone if I am not the most cheerful man in the Rogue River Valley, and I don't believe any game is finished until the ninth inning. There is no such word as fail, and I believe that now we are groping around in the dark that just precedes the dawn. We just want a fine, reasonable, healthy profit. We don't want to ride in Pullman cars. We will be contented with a Ford any time. I can't see how with 100,000,000 people in the United States and with millions abroad willing to eat our fruit, why we can't make a nice handsome profit. If we can't, there is a screw loose somewhere and it is our business to find that screw and tighten it up, and that is what we are going to do.

EARLY HISTORY OF THE PRUNE INDUSTRY IN OREGON

By H. M. Williamson, Secretary, State Board of Horticulture

In this paper the word "prune" is used according to American usage as the group name for those varieties of prunes which are commonly dried whole.

The first prune tree in Oregon arrived in 1847 in the famous collection of nursery stock brought across the plains that year by Henderson Luelling. It was a common German prune of the type commonly used in Germany for making Prune butter and for drying.

Dr. J. R. Cardwell, in his first report as president of the State Board of Horticulture, published in the First Biennial Report of the Board, stated that in 1857 Henry Miller, of the firm of Miller & Lambert, nurserymen, of Milwaukee, Ore., sent to Ellwanger & Barry, of Rochester, N. Y., for scions of the best drying prunes and received from that firm scions of Italian and d'Agen prunes. The latter prune was introduced in California the same year by Louis Pellier. It is the variety grown in California for drying and is known in Oregon as the Petite or French prune. Seth Lewelling, who was also engaged in the nursery business at Milwaukee, Ore., either shared in the importation of scions made in 1857 by Miller & Lambert, or imported on his own account scions of Italian prunes about the same time, and in 1858 or 1859 he planted an orchard of five acres of Italian prunes which was the first prune orchard in Oregon. Mr. Lewelling's main object in planting this orchard was to produce fruit for shipment fresh to California which was at that time paying high prices for all the fruit which Oregon could supply.

In those days Dr. J. R. Cardwell was practicing his profession in Portland, but was then, as always, greatly interested in horticulture. He was a frequent visitor at the nurseries and orchards of Lewelling and of Miller & Lambert, and became convinced that Oregon has extraordinary favorable conditions for the production of plums of the Domestica or European varieties. It was not then possible to ship fresh plums from Oregon to the East and Dr. Cardwell made extensive inquiries as to the demand for evaporated and dried plums and prunes and was advised by nearly everybody to produce evaporated pitted plums in preference to dried prunes as pitted plums were then selling at extremely high prices and the demand appeared to be good. He agitated the subject of producing evaporated pitted plums and dried prunes in Oregon, and started the industry by planting in 1871, 1872 and 1873 4,000 plum trees and 1,000 Italian prune trees. At the time he planted these trees evaporated pitted plums were selling at wholesale in Eastern markets at 35 cents per pound. By the time the trees had come into bearing the price was down to six cents per pound and it was impossible to produce evaporated pitted plums here and send them East without losing money. It was less costly to cure the Italian Prunes; they shrank less in drying, and sold at better prices than the pitted plums, and Dr. Cardwell commenced the work of top-grafting his plum trees with scions of Italian Prunes. In inaugurating the business of drying prunes by artificial heat Dr. Cardwell had to learn everything by experience. The methods then in vogue in Europe were wholly unadapted to use on a large scale in countries where labor cost is high. The only method of drying prunes then used in this country was that of drying in the sun, practiced in California, which was not practical in Oregon. Dr. Cardwell sank several thousand dollars in experimenting with various evaporators which had been invented in the east, but finally developed a dryer which did fairly satisfactory work in an economical way. This was the old so-called box dryer and nearly all of the early prune growers used the same or a similar type. These box dryers, if tended with skillful care turned out a well dried prune, but there were many things about them which were objectionable, and they long ago gave place to evaporators which make the production of well dried prunes easier and less expensive.

Dr. Cardwell's enthusiasm about the prune industry and the example he set in planting proved contagious. In a short time there were a number of others who were planting prune orchards in Oregon and Washington. Only a few can be mentioned. S. A. Clarke, who was long editor of the Willamette Farmer when that paper was published at Salem, planted a prune orchard near Salem in 1875; Jesse Bullock, a retired business man of Portland, set a small prune orchard at Oswego about the same time. In 1877 A. W. Hidden planted two acres at Vancouver, Wash.; John H. Fletcher, who lived near Vancouver, began planting Italian prune trees in 1879 and became one of the leading prune growers of the Pacific Northwest; Cyrus E. Hoskins was not the first man who planted prune trees in Yamhill County, but he was the real founder of the prune industry in that county. He began to plant about 1879 and made his first carlot shipment of dried prunes in 1887. J. R. Shepard was the leader in starting the prune industry in Polk County. He planted a prune orchard before 1880. Dr. Abram Sharples was the first to plant a large prune orchard in Lane County. The first prune orchards were planted in Douglas County in 1881 or 1882 in the vicinity of Myrtle Creek by John Hall, J. W. Weaver and others. Between 1880 and 1890 the prune industry developed more rapidly in Douglas than in any other county in the state. In 1884 E. P. McDaniel planted a prune orchard of six and one-half acres in Union County. The oldest prune orchards in Umatilla County were planted about the same time. Andrew Sinton and Mike Chrisman of The Dalles were the first prune planters in Wasco County and commenced planting about 1882.

In 1893 the writer, who was then editor of the Rural Northwest, made extensive inquiries as to the acreage of prune orchards and the number of trees of each variety then growing in the orchards of the Pacific Northwest and from the reports then obtained it is believed that at that time about 80 per cent of the prune trees in Oregon were Italian, about 12 per cent were French and the others were silver, German, Willamette, Golden and other varieties. From the start it appears the Italian was the popular variety of prune with planters in Oregon. Prof. Hedrick, in his excellent work, "The Plums of New York," says the Italian prune originated in Italy more than one hundred years ago and has long been common in the northern part of that country, especially in the vicinity of Milan. A book published in Boston in 1832, entitled "The New American Orchardist," describes the Italian prune and said of it: "This variety, according to Messrs. Parmentier and Chew, is not only a most valuable plum for drying, but in Italy is esteemed a most superior fruit when gathered at maturity from the tree." Italian prune trees were introduced in Germany by a Swiss nurseryman named Fellenburg and in this way the Italian prune became known in Germany as the Fellenburg prune and the name found its way from Germany to this country as a synonym of Italian as applied to this variety.

The largest plantings of French prune trees were made in the vicinity of Myrtle Creek, Douglas County. Marion County also had a considerable number of trees of this variety as did Jackson County. In Jackson County the climatic conditions were found to be more favorable for the French than for the Italian prune, but most of the prune trees of that county were dug up a number of years ago under the probably mistaken opinion that apple and pear trees would prove more profitable. In the Willamette valley the French prune bore larger crops and yielded more regularly than the Italian but tended to over-bear to such an extent as to make the fruit very small and of comparatively low quality. Some growers overcame this tendency by systems of pruning. The Silver prune (Coe's Golden Drop plum), met with much favor on the market at first, but unfortunately it became quite a common practice in California to dry inferior yellow plums and place them on the market under the name, Silver prune. Some dryers also exposed the Silver prunes to sulphur fumes for an excessive length of time and greatly injured the quality. The Silver prune is also costly to dry on account of its large size. The most serious of all objections to it was that the trees lacked health and succumbed easily to adverse climatic conditions, and the climatic conditions of the Willamette valley proved unfavorable. The German prune did not last long in Oregon. In type it resembles the Italian, but is inferior to it both in size and quality.

At the time the planting of prune orchards began in Oregon the horticulturists of this State were giving much more attention than now to the matter of originating new varieties. Seth Lewelling was the leader of this work in Oregon. While his greatest successes were the Black Republican and Bing cherries, he did not confine his efforts to cherries. In 1875 he carefully selected 200 seeds of Italian prunes and planted them. Among the trees which grew from these seeds he found but one which proved worthy of propagation. This bore a large prune of golden color from 50 to 100 per cent larger than the Italian, and of excellent quality for eating fresh, canning or drying. He named it the "Golden Prune." Unfortunately the trees did not prove healthy in the Willamette valley and the variety was not propagated to any great extent. In Eastern Oregon the Golden prune trees are vigorous and healthy, and it is so resistant to cold that it is grown in the western portion of South Dakota. In 1876 Jesse Bullock sent to German for seeds of Italian prunes and planted them on his place at Oswego. The young trees which came up from these seeds were allowed to grow in nursery row until they commenced to bear. Cyrus E. Hoskins, of Newberg, watched the young trees and examined the fruit they bore and finally selected six which gave promise of being worthy of propagation. After further observation he rejected four of these. The remaining two were named the "Champion" and the "Willamette." The Champion is an early plum of excellent quality for shipping fresh, but when dried shrinks too much and is too sour for a commercial prune. The Willamette prune is the most valuable prune which has originated in Oregon, and is probably more valuable than any other which has originated on the Pacific Coast. It is larger and sweeter than the Italian prune; ripens a little earlier, gives a higher percentage of dried to fresh fruit and is remarkably easily dried for so large a prune. It is not free from faults, but most of its faults it has in common with its parent, the Italian. If it, rather than the Italian, could have been originally made the leading prune of Oregon, it is probable but not certain that it would have been better for the prune industry of the state. It is unfortunate that for a number of years the Willamette was believed to be identical with the Pacific prune, another prune which originated in Oregon. Owing to the belief that the two varieties were identical, many of those who bought trees for Willamette may have received Pacific, and vice versa. The two prunes much resemble each other in color, shape and flavor. The Pacific trees are upright growers of unusually vigorous habit, whereas the Willamette grows much like the Italian. The fruit of the Pacific averages larger than that of the Willamette and varies much more in size. The largest specimens of the Pacific are among the largest of all plums or prunes. The Pacific prune, however, proved extremely subject to Brown rot under the climatic conditions of Western Oregon, so much so that in some seasons when the fruit was ripening it was impossible to find a specimen of the Pacific which was edible, although fair to look upon outwardly. The Pacific prune originated as a sprout from the roots of a plum tree on Mount Tabor, in the suburbs of Portland.

Another large prune which originated in Oregon is the Dosch, which was raised by Col. Henry E. Dosch on his place near Portland. It was regarded by prune experts as a prune of much promise, the dried fruit being very large and remarkably sweet. It was never propagated to any extent.

A number of other new varieties of prunes have originated in Oregon, Washington and Idaho. Some of these so much resemble the Italian that the dried prunes could be sold as Italians, and it has been claimed for them that they are superior to the Italian on some points. It is possible that some of them are. It is a matter of hope that we will in time develop a variety of prune which will have at least all the good points of the Italian and be free from some of its weak points.

Early Marketing.

The pioneer planters of prunes in Oregon were naturally men of initiative or they would not have gone into the prune business at the time they did. They did not expect buyers to come around hunting for their prunes. Although the work they did in exploiting Oregon prunes and finding markets for them was done individually for the most part, there was much efficient work done along these lines. Cyrus E. Hoskins, who was from Indiana, at once established relations with a wholesale grocer of Indianapolis who took a most friendly interest in his prunes and paid him highly encouraging prices. Mr. Hoskins shipped his first carload in 1887, and it netted him seven cents per pound, f. o. b. Newberg. The next year his shipments netted him 12½c, f. o. b. Newberg. The third year he obtained slightly better prices. The fourth year, 1891, he shipped several cars. For one car, composed mainly of Silvers, he obtained 14½ cents, f. o. b. Newberg, but for his poorest grade he obtained only six cents that year. John H. Fletcher, in early days the leading prune grower at Vancouver, Washington, established a business connection with a St. Louis firm which enabled him to obtain decidedly satisfactory prices for a number of years, and until local buyers wanted his fruit so badly that he received seven and eight cents per pound for his entire crop, ungraded, as late as 1893 and 1894. E. H. Ricker, with some support from growers and others at Vancouver, Washington, took samples of Italian prunes to New England and made exhibits in various cities. In Boston his exhibit was made in the Chamber of Commerce, and Mr. Ricker succeeded in obtaining a large amount of free advertising of the best kind in the press of Boston. It was a common practice among the early growers to send boxes of their cured prunes to relations and friends on the other side of the Rocky Mountains and many of the recipients enthusiastically shared the prunes with editors of local newspapers which resulted naturally in more advertising of a desirable kind. S. A. Clarke took a carload of dried prunes to Montana, and as he was a veteran newspaper man of ability, the

Oregon prunes received a fine reception from the press of that state. At a later period when prices had sagged and prunes were hard to sell, quite a number of growers went East with cars of prunes which they explpited and sold as well as they could.

The good prices obtained by the early prune growers and the resulting rapid growth of the prune industry in the Pacific Northwest did not long escape the attention of the professional promoter and brought about

The Unfortunate Boom Period.

Some of the promoters used good judgment in the selection of land; some used apparently neither knowledge nor judgment, and a few deliberately selected unfit land because it could be bought at a low price. These promoters had some good stories of large profits to start with and these stories steadily and rapidly grew as such things are wont to do. The claims which were finally made as to the ease of growing in Oregon; that adaptibility of all our land to prune production; the fabulous demand for prunes, and the magnitude of sure profits were so preposterous that it is hard to understand how people of ordinary common sense could be made to believe them. It was said and repeated that every acre of land from the snow line on the peaks of the Cascade Mountains to the shore line of the Pacific Ocean could be depended upon to yield never-failing crops of prunes and that there were more than a billion of people in the world who were hungry for prunes. In the winter of 1893-1894 the Tacoma Ledger published an interview on the subject of prunes with P. C. Kauffman, a banker of Tacoma, Washington. In this interview Mr. Kauffman was made to say in substance that he had studied the prune business closely and was prepared to say that he could make more money off of ten acres of prunes three years after the trees were planted than could possibly be made without prunes on the best 160-acre farm in the United States; that he was conservative in placing the net profits from a prune orchard in Western Washington at from $300 to $500 per acre per year, and that during the previous year the Unted States had imported 350,000,000 pounds of prunes, costing 12½c per pound. In fact, the United States was at that time importing about 60,000,000 pounds of prunes annually, and they were nearlv all the so-called Turkish prunes, the value of which at the port of entry was about two cents per pound at that time. The Rural Northwest, of February 1, 1894, said among other things in reference to this interview:

"We fear that Mr. Kauffman has not figured quite so closely as he thinks, for we find he puts the price of prunes at 12½c per pound. He also states that the United States last year imported 350,000,000 pounds of prunes, representing the sum of $24,500,000. We hope that Mr. Kauffman has not magnified the profits of prune growing to such an extraordinary degree as he has the amount and value of our imports of prunes. We believe that prune-growing will be found a safe and profitable business in the Pacific Northwest in the hands of the right kind of men, but those who are led to engage in it by such statements as those of Mr. Kauffman are pretty sure to make a failure of the business, and will retard rather than advance the development of the industry."

In the same issue, February 1, 1894, the same paper said:

"When prunes from this section were first placed upon the market, they brought such high prices that even conservative men of good judgment were led to believe that enormous profits could be counted on with cetrainty. . . . Real estate speculators saw their chance and boomed the business until a veritable craze was developed. The worst feature of this craze has been to induce a great number of persons to engage in raising prunes who are utterly unfitted for the business. . . . The prune-growing business can only be built up to great dimensions by producing and placing the fruit upon the market at a low price. . . . There may be temporary periods when no one will make any money on prunes, but it is certain that prune-growing will be one of the leading branches of the fruit-growing industry in the Pacific Northwest, and that skill and business ability will not fail to bring ample profits in the long run to those who apply them to the production of prunes."

So widespread was the craze for planting prunes that a number of prosperous farmers in Eastern Washington paid from $300 to $500 per thousand for Italian prune trees.

The men who had actually developed the prune industry in Oregon and Washington did what they could to warn intending planters, but their warnings were easily explained away by the professional boomers as being the utterances of selfish men who were trying to keep a good thing to themselves. Owing to the fact that in Clarke County, Washington, large tracts of land which were utterly unfit for prune-growing had been planted with prune trees to be sold in small tracts to persons who buy without looking beneath the surface, the Clarke County Horticultural Society made arrangements to have members of the society take turns in waiting at the ferry landing in that city to warn strangers against buying prune orchards planted on tracts of such a nature that failure was certain. For a time the members of the society persevered in their patriotic task, but finally became discouraged. They found that the person who has been made to believe that by making some specific investment he will assure himself an annual profit of 100 per cent or more on his investment is in no mood to be dissuaded.

The Reaction.

Every boom is inevitably followed by a reaction, the severity of which corresponds closely with the intensity of the boom. The prune-planting boom reached its culmination in 1894. By that time prunes were becoming plentiful and prices were going down. The general financial depression which affected the country at that time made the reaction in the prune industry more severely felt than it would have been under normal financial conditions. In the next three or four years many of those who had bought prune orchards with rosy visions of one hundred per cent profit per year had their expectations shattered. It was found that many prune orchards were planted in unsuitable places or on land which was not adapted to prunes. The prices of prunes continued to go down. The very men who had talked loudest about the great profits to be made in growing prunes were among the first to declare "there is nothing in prunes." Undeserved condemnation of the prune industry became as common as the excessive claims of profit for it had been in the boom period. The demand for prune trees dropped so suddenly that growers of prune trees were left with large quantities of stock on their hands, and Italian prune trees were offered for as low as ten dollars per thousand, and even less. Prune orchards which had cost their owners from three hundred to four hundred dollars per acre were sold in some cases for one hundred dollars per acre, and the foundation of some comfortable fortunes were laid by men who bought prune orchards with good judgment in the days of depression.

It was, however, during this period of reaction and depression that the

Prune Industry Made Its Greatest Real Progress.

The real prune growers found themselves confronted with a great number of problems which had to be solved and their minds were active. It was evident that the common box dryers must give place to some less laborious process of drying the fruit. Many men studied evaporation problems as applied to the drying of prunes and a great number of evaporators were invented or devised, some of which proved to have much merit. It was found that there was much to learn about temperature, moisture of air, circulation of air and other matters connected with the drying of the fruit as well as to the picking and preparing of the fruit for drying, and treating and packing the prunes after drying. There was vigorous discussion of such questions as whether or not prunes should be dipped in lye before drying, and whether pricking machines as a substitute for lye-dipping were a practical success. As the quantity of prunes produced increased more rapidly than the demands of the market prices reached so low a figure that there was no profit on the crop. Growers who could not sell at a satisfactory figure resorted in many cases to the practice of consigning their prunes to Eastern commission houses. Large quantities of prunes so consigned were shipped in bags and by the time they reached destination the floor of the car would be covered with prune syrup and often fermentation and mould had started. At best, consignments to markets where no special demand exists break down prices, and this resulted with prunes. Eastern dealers who had bought in the Pacific Northwest found they would have to sell in competition with fruit offered in their own cities at prices lower than they had agreed to pay to the shipper. The result was that if any possible fault could be found with the shipment it was rejected. The growers saw that it was necessary to stop consignments. At that time prune markets in California had made more progress in organization for marketing purposes. There were strong local union in that state which attended to grading and marketing the output of their members. These unions found the poor marketing methods of the unorganized prune growers of California had a demoralizing effect upon the prices of California prunes. With a basis of the unions already organized in that state the prune growers of California organized the California Cured Fruit Association for the purpose of securing control, if possible, of so large a proportion of the prune crop of that state that the outside portion could not be used to seriously affect prices. The California plan seemed a good one to many of the prune growers of the Northwest, and a conventoin of prune growers of Oregon, Washington and Idaho was held at the Chamber of Commerce, Portland, Oregon, March 7 and 8, 1900, which was attended by about one hundred and thirty of the leading prune growers of the states named. Oregon counties were represented in that convention by the following number of growers:

Three from Benton County, seven from Clackamas County, one from Douglas County, two from Gilliam County, two from Jackson County, one from Josephine County, three from Lane County, four from Linn County, thirteen from Marion County, twelve from Multnomah County, three from Polk County, one from Umatilla County, four from Wasco County, two from Washington County, and nineteen from Yamhill County.

The organization and incorporation of the Cured Fruit Association of the Pacific Northwest was perfected at this meeting and a board of fifteen directors was elected. An iron-clad contract was prepared which compelled those who signed it to deliver all of their dried prunes to the association with a proviso that the contract should not be effective until 75 per cent of the acreage of bearing prunes in the Northwest was under contract. Judge William Galloway was elected president of the association; John H. Fletcher of Vancouver, Washington, first vice-president; Henry E. Dosch, secretary, and W. K. Newell, treasurer. Well attended meetings were held in the leading prune-growing counties of Oregon and Washington and a good deal of enthusiasm was shown, but it was never found possible to get the required acreage of prunes under contract. In anticipation of the probable inability of the Cured Fruit Association to get enough contracts to commence business a meeting of prune growers was held at Salem, Oregon, in July, 1900 at which the Willamette Valley Prune Association was organized. The first officers were: R. J. Spencer, president; L. M. Gilbert, vice-president; H. S. Gile, secretary and manager. Subsequently somewhat similar organizations were made at Roseburg and Albany. The Willamette Valley Prune Association, however, was the organization which did most for the prune industry of Oregon. Its management saw from the start the importance of developing an increased demand for Oregon prunes and the establishing of standards and brands. Through its efforts active men were sent to England and Scotland to introduce the Italian prune of Oregon in those countries. Much was also done by this organization to introduce the Oregon prunes in districts in which they were not then known nor wanted as well as to increase their popularity in sections in which they were already known to some extent. Such organizations usually fail to satisfy all their members, and this was true of the Willamette Prune Association, but I do not think that any outsider can investigate the work done by this association and the results of its work without giving it the credit of having been the greatest of the factors which have built up the demand in the United States and Europe for Oregon prunes.

It is not easy to determine where, from the present point of view, the early history of the prune industry in Oregon ends, but there is another matter which, because it may occur again, should be mentioned. In 1896 the fall was unusually warm and rainy, and in November there was a hard freeze while the trees were yet soft and full of sap. Great damage was done to fruit trees of all kinds. This was followed by prolonged cold, rainy weather in the spring of 1897, weather most unfavorable to the health of the Italian prune. In the latter part of the summer the Italian trees showed an alarming appearance. It was feared that a new disease had attacked the trees and not a few believed the Italian prune trees would soon become a thing of the past in Oregon. The scientists found no disease, but this did not alay the alarm. In a lesser degree this trouble which was commonly called the "curl leaf of the Italian prune," showed itself afterwards, but the conclusion was finally quite generally reached that the trouble had been caused by unfavorable weather conditions which affected the Italian trees much more than other varieties of prune and plum trees The growers did not thereafter show so much alarm when trees appeared to be and were in an unhealthy condition and perhaps have at times taken less interest in this unhealthy condition and its causes than they should have done. The gradual up-building of the prune industry in the past twelve or fifteen years; its general recognition as one of the most reliable and valuable branches of the horticultural industry of the state; the renewed interest in the problems relating to the drying of the prunes; the perception of the need of artificial fertilizing of many of the orchards, and of the stimulation of growth during the spring season; the growing demand for effective standardization of the whole product of the state, and a start in the direction of co-operative curing of prunes in large central plants, assuredly belong to the recent rather than the early history of the prune industry.

Mr. E. H. Shepherd, not being present, his address, "Efficiency in Orchard and Crop Management,' was read by Secretary C. D. Minton.

ECONOMY IN HARVESTING

By E. H. Shepard, Editor and Publisher of "Better Fruit," also "Apple Grower," Hood River, Ore.

A few years ago apples commanded such a high price with a ready sale, that economy in the orchard industry was very little thought of. As a matter of fact, the fruit grower could make money, no matter how great his expense. "Necessity is the mother of invention." Therefore in these last few years when low prices have prevailed, with no immediate prospect of higher prices, fruit growers have realized that in order to make money it would be necessary to reduce the cost of production both in growing and harvesting.

Originally it was my intention to include in this addreess something on Economy in Growing and Cultural Methods, but inasmuch as Prof. C. I. Lewis, Horticulturist at the Oregon Agricultural College Experiment Station, has issued just recently a bulletin on "Economics of Apple Orcharding" in which culutral methods are discussed so thoroughly I hardly think it necessary to take up that phase of the business, as time is limited. But I do want to say that Professor Lewis has contributed to the orchard industry, in his bulletin, the most valuable, complete and thorough—in fact the only thorough—treatise on the subject of Orchard Economics that it has ever been my pleasure to read.

As your program is unusually long I shall endeavor to be brief and therefore proceed without further discussion upon the subject assigned to me—Economics in Harvesting the Apple Crop.

Thirteen years ago I became a fruit grower in Hood River Valley. When I produced 1,200 boxes the harvesting season lasted from the middle of October until Christmas time. This year I harvested over nine carloads in 34 days. A few years ago the cost of harvesting a box of apples approximated 50 cents per box in most cases. Wiping and grading cost anywhere from 10 cents to 20 cents per box, and every expense connected with harvesting was proportionately high, but gradually the expense has been reduced. A few years ago I published an itemized cost on the harvesting expense, which set the ball rolling and since then we have been furnished with many figures on the cost of harvesting, each year showing a reduction in this cost. Four or five years ago I asked one of our prominent growers what it cost him to pick, how much it cost him to grade, to pack, etc., and was surprised at his reply, "I do not keep costs on these different items; I cannot answer your questions, but I know it costs over 75 cents to grow and market a box of apples."

It is a well-known fact that many large manufacturing concerns have been restricted in the price they can sell at by competition. With no prospect of increasing the sale price, their only opportunity of making money on the investment was through efficiency and economics in production. The fruit grower today is facing the same problem—economy and efficiency in the growing and harvesting costs. No man in a manufacturing business or any producing business—be it either growing apples or producing anything else—is in a position to reduce the cost of production unless he knows the cost of every item of production; he cannot reduce the costs if the costs are classed under one general head of costs. Therefore, several years ago, with the aim in mind of reducing the cost of production, and more particularly the harvesting cost which I am discussing today, I divided the harvesting costs into 12 separate items which in my opinion is a sufficient itemization of the costs to enable the grower to ascertain where the expense can be reduced. This classification of harvesting costs is as follows:

Packing, picking, grading, making boxes, orchard hauling, hauling to the depot, help in the packing house, hauling empty boxes to the packing house, nailing up, boxes, paper, and superintending.

First, I desire to make one general statement and then I will proceed to explain in detatil. Last year I saved 4½ cents over the previous year, per box, and this year I saved 4 cents per box over last year. Two years ago I thought I had nearly approached the minimum; last year I felt quite sure I had, but by careful work as already stated, I succeeded in reducing the cost of harvesting 4 cents this year, compared with last year. My saving this year is more largely through efficiency than in lower costs. This will be evident to you when I tell you that I marketed two carloads more this year than last year, in three days less time, with one man less in the harvesting crew. With my present facilities, which are limited, I have no hesitancy in making the statement that I could harvest at least double the quantity or more, in the same length of time as I harvested the crop this year, at a less cost.

My packing cost was 4 cents per box. A few years ago we paid 7 cents per box for packing. A packer is entitled to fair wages as any other first-class worker. What he earns depends upon the number of boxes he is able to pack. This quantity can be decreased or increased by the facilities afforded him. Therefore it is economy to provide the packers with convenient room, good light, and all necessary facilities for efficient and speedy work.

On account of low prices last year, not feeling able to spare the money to build a packing house, I went down to Portland and had the Portland Tent and Awning Company make me a tent 30 by 40 feet, the top made of 12-ounce duck, and the sides of 8-ounce. The top and sides were sewed together in one piece, and the ends were made separately of 8-ounce duck. The sides and ends were 8-ounce instead of 12-ounce, reducing the cost of the tent. Instead of having the tent made as tents are usually made, with the ends, sides and tops all in one piece, I had the top and sides made in one piece, the top and sides being nothing more or less than one big sheet and the ends separate, which makes the tent very easy to put up. I would also call your attention to the fact that by having the tent made this way, it can be hung up after the packing season is over in such a way as to prevent the tent becoming rotten when it is stored away, if damp or wet. I built a framework which I will leave standing and put in a floor of one-inch boards, because they were cheaper, and took the floor up at the end of the season to prevent it beecoming warped if it remained out all winter. The cost of this tent was $80, the lumber $25, work of putting up the frame and tent $20, making the total cost of $125. And I want to say that I believe I had the best packing house in Hood River for the reason that a tent gives you a much better light than you can possibly secure in any packing house where you depend for your light through windows, no matter how many windows you put in. In addition to this, I want to call your particular attention to the fact that a tent which affords ample facilities for packing 10,000 boxes or more for that matter, only costs $125. You could not erect a decent looking building which you would want to leave permanently on the place, of the same size, for less than $1,500, or more.

I used a grading machine which made two grades, sorting into nine sizes, setting back the C grades and cooking apples and running these through the machine at the next run, which reduced the amount of rehandling to almost a minimum, because the percentage of C grades and cookers in any well regulated orchard should not exceed approximately about 15 per cent of the crop. Benches were arranged alongside of the packers, affording a place for the packer to set off his box without loss of time. Packing paper was placed on these benches in close proximity to the packers and also the layer paper; the lining paper being hung on the posts supporting the ridge pole, so there was no loss of time on the part of the packer in securing either his box, wrapping paper, lining paper or layer paper, or in setting off the box.

With such facilities, and even mine could be improved upon, a good packer can pack from 100 to 125 boxes per day. One hundred boxes a day at 3½ cents per box would make $3.50 per day of ten hours, which is pretty good wages during these hard times. I think any packer would be willing to work where facilities were such that he could pack out 100 boxes a day and at 3½ cents per box, which would enable him to make $3.50 per day or more, according to the number of boxes packed. Therefore I believe the cost of packing in the near future can be reduced one-half cent or more.

Picking.

Picking is one item in connection with harvesting a crop of apples which is the most difficult to do efficiently and at the same time economically. I find picking costs vary all the way from 3 cents to 8 cents per box. Last year my picking cost was 8 cents per box. This year it was .0546 per box. It is difficult to make a comparison of one orchard with another on the cost of picking, because the cost of picking will vary greatly on account of the age of the tree, the size of the crop on the trees, and the size of the apples. There is one thing I do not believe in, and that is too much speed in picking. Too much speed means too many apples that are bruised and consequently a heavy loss. Too much speed also means too many spurs pulled off and too many stems pulled out. When a stem is pulled out, if the skin is broken, the apple is unfit for any of the marketing grades except the Cooking grade. If the spurs are pulled off your crop is not only shortened for next year, but for many years afterwards as apple spurs continue producing for many years. Therefore I never hurry my pickers, but aim to find out by watching some average picker closely, how many loose boxes he can pick a day and then trying to maintain this average on the part of the other pickers. In order that you may understand my cost of picking being higher than I think it should be, I want to explain to you that four acres of my orchard were old trees with a medium crop, therefore requiring much ladder work, necessarily making the expense greater in picking. In addition to this, 32 acres were in young orchard which are just beginning to bear, which also increased the picking cost per box. The size of the apples all the way through was good, as I had 76 per cent 4-tier, 17 per cent 4½-tier, and only 7 per cent 5-tier. Practically all of the 5-tier crop came from old Newtown trees which was my fault because, although I thinned them to one in a cluster, I did not thin them sufficiently, as the crop on these Newtown trees in the old orchard was unusually heavy.

The total number of days in picking was 156 for all men engaged, making an average per picker of 50 loose boxes per man per day, which in my case was equivalent to 35 packed boxes.

My pickers were paid $1.75 per day with the exception of my regular men who helped out in this work part of the time, and who received more.

The cost of picking can be reduced in several ways under the same conditions. The kind of ladder used is a big factor in the cost of picking. The ladder should be light, of convenient shape, so that it can be quickly and easily handled.

Making Boxes.

It cost me 1 cent per box to make my boxes, including the nails. Some saving can be made on box-making by either training one of your own men especially in this line of work or securing the services of an expert box-maker who can make them at ¾ cent per box and make good wages.

Grading.

My grading cost me $.0321. This, however, included the wiping of the entire crop, which was necessary, because I had applied Bordeaux spray on the 20th of June and another on the 1st of August. It is my opinion that grading, even including a normal wiping, can be done at a sum which will not exceed to any great extent 2½ cents.

Orchard Hauling.

Hauling empty boxes to and the filled boxes from the orchard to the packing house cost me $.0087. A saving could be accomplished in this line by using a wider wagon than the one I used, or a double-decker. My wagon held only 24 boxes when a wider wagon could be made to hold 36 boxes or more, or a double-decker 48 or more. This, of course, would make quite a reduction in the expense, saving time lost with the small wagon, hauling from the orchard; but, of course, would not save any time in loading or unloading in either case as this expense would be the same on the larger or smaller wagon.

Help in the Packing House.

Help in the packing house cost me $.0086. This consisted of having a man put the apples on the sorting table. Considerable saving could be made in this department with the right kind of a storage house and a good floor, which will enable the helper in the packing house to load the apples on a truck which would hold 24 boxes instead of carrying them one by one, leaving him part of his time with this arrangement, to assist in grading, also helping to reduce the number of men required on the grading. The floor in my packing house not being on a level with the storage equipment, necessitated my having the apples carried by the box instead of being wheeled in on a truck.

Hauling knocked-down boxes to the packing house cost me $.0025. This cost could also be reduced by having a larger wagon which would hold a greater quantity, requiring no more time than a wagon containing a smaller quantity of boxes. My wagon was only large enough to haul 250 boxes, knocked down, at a time, whereas the proper sized wagon should be one which would hold 100 or 110 boxes packed, which would hold 400 knocked down boxes, which would reduce this cost about 33 1-3 per cent.

Nailing Up.

It cost to nail up and stamp the boxes $.0096. The man doing this work had some spare time, although it was all charged against the nailing cost. This time he spent in removing any apples which got into any one of the grades through carelessness or any other cause, on the part of the sorters and graders. The stamping was done with rubber stamps. An additional saving could be made by using the latest patented devices for stamping the boxes with the number of apples, the grade, and the variety all at one time instead of having to use separate rubber stamps for each of these marks. Just how much this nailing up cost could be reduced, it is difficult to say, but I am inclined to think it could be done at ¼ or ½ cent less.

Boxes.

The boxes cost me 9 cents each. This price seems to be as low as any price I have heard of. A lower price could only be secured in accordance with the price of lumber and by ordering the boxes of your Association, which could place an order with some mill for an extra quantity early in the season, thereby securing a lower price.

Paper.

The paper cost me $.0331. No saving could be made in this item except through the ability of your Association Manager to secure supplies in this line at a less price by placing a very large order early with some paper mill anxious to secure the business.

Superintending.

This cost me $.01 per box. I charged up my own time at only $2.00 per day, while engaged in this line of work. Considerable saving could be made in this expense in accordance with the quantity of apples harvested, as I could have rendered the same service on twice the amount of apples, which would have reduced this cost to ½ cent per box.

I desire to call your attention to the way these costs should be ascertained. A perfect record should be kept of each man's time and every item of expense in every one of these 12 items connected with harvesting the crop. Most growers figure their picking expense per box on the actual number of boxes packed out, which is incorrect and a way that will never show you anything co-operatively. This cost should be placed on the entire number of boxes picked, whether they are packed out or sent to the vinegar factory. The grading cost per box also should be placed on the entire crop whether packed out or sent to the vinegar factory. Making up the boxes should be figured on the actual number of boxes packed; packing on the actual number of boxes packed; orchard hauling on the total number of boxes harvested; Association hauling in the same way because it makes no great difference in the cost whether the apples go to the warehouse or to the vinegar factory. Help in the packing house should be figured on the total number of boxes harvested. Knocked down box hauling should be figured on the total number of boxes packed out; nailing up on the total cost of the boxes packed out, and the cost of boxes on the total number packed out. Paper should be figured also on the total number of boxes packed out, while superintending should be figured on the total number of boxes harvested, whether packed or not.

Permit me to say that these costs are determined on a crop of 5,520 boxes packed out, and 530 boxes to the vinegar factory. Total crop, 6,050 boxes. These 530 boxes going to the vinegar factory made .087 per cent of the total crop, 300 boxes or .049 per cent being windfalls and the other 230 boxes or .038 per cent being culls due to all other causes such as bruises, scab, stings, worms, etc.

I had .76 per cent 4-tier, .17 per cent 4½-tier, .07 5-tier, and 89 per cpent extra fancy and fancy combined, and .102 per cent C grade.

Allow me to state the costs of each department connected with harvesting, with the hope that this information will help some of you to do the work more efficiently and more economically than I have done it, because I believe it can be done for much less and considerably better.

Cost of harvesting per box in my orchard was as follows: Packing, $.04; picking, $.0546; grading $.0321; making boxes and nails, $.01; orchard hauling, $.0087; Association hauling, $.0205; help in packing house, $.0086; knocked down box hauling, $.0025; nailing up and stamping, $.0096; box, $.09; paper, $.0331; supperintending, $.01. Total, $.3197.

The cost of harvesting a crop of apples can be reduced in proportion to facilities afforded, through economy in material and the wages paid the workmen. I also desire to call your attention to the fact that a saving can be made by maintaining a well balanced crew in each department of harvesting so that no one department will be held up by a lack of efficiency or help in any other department.

It goes almost without saying that the larger the crop the more economically the work can be done. My crop was a moderate sized one and I want to be frank and state that I know many growers harvested at a less cost than I did this year. My aim has been to outline a plan showing the costs, which would afford every grower a comparison and thereby be of value to him enabling him to determine where he could reduce his cost in any department, whether his crop be large, of moderate size, or even a small crop.

In conclusion permit me to state that I think the following savings could be made in each one of the departments in my classification. A saving could be made in packing, $.005; picking, $.015; grading, $.0075; orchard hauling, $.0037; help in packing house, $.0044; hauling knocked down boxes, $.001; nailing up, $.0034; superintending, $.005. Total, $.045.

Or, in other words, I believe a crop of apples can be harvested with proper facilities and business-like methods at a cost of $.2757, which is just about one-half of what harvesting cost us four or five years ago.

President Washburn: When I first went down to the Rogue River Valley, I used to sit on a box and wonder whether I should spend the winter in Honolulu or New York. Now, if I am sitting anywhere, it is behind the horses helping with the work—and I am trying to see if I can escape going to a hotter place than either Honolulu or New York. We are all trying to do it, and all the time prices seem to be going up. That is the price of everything except fruit. For instance, since I have been in the Rogue River Valley, the price of labor has gone up 50 per cent. The price of material has gone up and Mulligan stew has gone up 100 per cent. Paper is going down, but the price of boxes is going up.

We have centralized our packing, but when it comes to getting a box of apples out at less than 65 or 70 cents, we stall. We can save one, two, and five cents, but that is not going to be sufficient. We must save 25 and 50 cents a box in the matter of selling.

Question: How much do you pay for your packing?

Answer: Four cents after grading.

Mr. Minton: The packing shed mentioned by Mr. Shepherd is a very cheap one. There is no doubt about that, and the price of building a real one is too high, nearly twice as high as necessary. He can reduce his cost considerable in handling, however, if, instead of using a large truck accommodating about twenty-four boxes, he use a small two-wheel truck accommodating about four or five boxes. A platform nailed onto cleates leaving room for the point of the truck to slide under it will eliminate two handlings of the boxes of fruit. You can run this truck under a stack of four or five boxes, and lift them quickly saving the handling of each box separate.

NITROGEN AND APPLES

Nitrogen Stimulates the Growth and Yield of Devitilized Fruit Trees.

By R. W. Allen, Supt. Umatilla Experiment Station.

In February, 1914, a series of experiments were started in the Hood River Valley to determine the comparative value of different elements of soil fertility upon the vigor of growth and productivity of fruit trees that had been kept continuously under clean culture since the time of planting. As the land was practically devoid of nitrogen and organic matter, the medium in which most of the soil nitrogen is to be found, a considerable portion of the work was devoted to tests of the value of nitrogen. This element was applied in a number of ways.

A type of soil known as Hood Silt, which predominates upon the east side of the valley, was chosen for the work. The orchards had been continuously clean cultivated since planting. The trees were of the Spitzenburg variety about 16 years of age. The plats include 20 trees each and were selected under the most nearly uniform conditions possible. The experiment in one orchard was a duplicate of the work conducted in the other except that a small amount of caustic soda was mixed in the nitrate solution applied to one and an equal quantity of caustic potash to the other.

The first season, 1914, the applications were not all made at the same time. As a result it was observed that the earliest applications, which were made March 17, exerted a marked influence upon the vigor of the trees throughout the season, while the later applications, some of which were made May 7 and 19, did not appear to affect the trees until near the close of the growing season.

The work was repeated in 1915, all applications being made at the same time, March 13 and 19, respectively, upon the two orchards. An additional plat was added to the experiment this season designed to strengthen the work in determining if there is a perceptible invigorating influence upon the tree resulting from applying nitrate of soda to the branches and preventing its reaching the roots upon falling to the ground.

From the long continued practice of clean culture in the orchards in the valley has resulted a seriously depleted supply of organic matter and nitrogen in the soil With the loss of organic matter and increase in size and demand of the tree, drouth as well as shortage of nitrogen has contributed to the serious weakening of many fruit trees. This process had advanced to such an extent in some of the older and more persistently cultivated orchards, that the trees had for some time been very yellow in appearance, weak and unproductive. A heavy crop of blossoms, that were weak in character and much under normal size, usually appeared each spring, but only a small number were able to develop and produce fruit.

Although the trees were known to be badly in need of nitrogen as a constituent of the soil, it was decided, upon taking up fertilizer work, to find if the methods of spraying trees with nitrogen reported by Ballard and Volck (1) as having increased production were of practical and economic value for the conditons existing in the Hood River Valley. For this purpose it was necessary to determine if the presence of nitrate of soda upon the branches exerted a beneficial influence, or if the result came entirely from the excess of the spray which fell to the ground conveying its nitrogen to the roots of the trees. It was for this purpose that nitrate of soda was applied to the trees and ground in the manner described above.

As space will not permit all the important data being given for both experiments, from which very similar results were derived, only the one giving the most strikink results will be discussed.

The plats were treated as follows:

No. 1—Check plat, no fertilizer.

No. 2—Nitrate of soda, 1 pound per gallon of water applied to the tree in form of spray, the excess being allowed to fall to the ground.

No. 3—Same solution as applied to the trees in No. 2 applied to the ground about the trees.

No. 4.—Nitrate of soda crystals applied on the ground about the trees and worked in with the spring cultivation.

(1) Journal of Agri. Research, Vol. 1, No. 5, n. 437.

The nitrate solution applied to plats two and three was made up by dissolving 135 pounds nitrate of soda in as many gallons of water. To this solution was added 19 pounds of caustic soda. This quantity of spray was applied to each plat, giving 6¾ gallons of the liquid and as many pounds of nitrate of soda to each tree. To plat four was applied 135 pounds nitrate of soda, an equal quantity per tree. This application gave to each of the trees 1.08 pounds of nitrogen which is equivalent to 70 to 75 pounds per acre.

Results derived from the first year of this work show plainly that all plats receiving nitrogen, whether it were applied to the tree in the form of spray, or to the ground in liquid or crystaline form, were much benefited by it. No appreciable difference could be noted in the vigor of the trees and yield of fruit that could be attributed to the manner in which the nitrogen was applied. All the fertilized trees were green and vigorous, yielded heavily and presented a much more robust appearance than the untreated check plat which was in as good condition as the others before the experiment was begun.

As the treatment of trees described above is not such as will prove conclusively that the nitrogen lodging upon the aerial part of the trees is of no appreciable value as a fertilizer, or invigorating agent, a fifth plat was added in 1915. The purpose of this part of the experiment was to find if the small amount of nitrogen that could be kept on the surface of the tree did in any way affect its growth. In order to make this determination a large heavy canvas was placed upon the ground to prevent all the liquid which fell during the operation of spraying from getting to the roots. Owing to there being insufficient number of trees in the orchard which have not been influenced by the past year's work for a full plat a smaller number had to be taken for this determination.

Five trees were sprayed in this manner, and as there was a quantity of the solution which was the same as applied to plats 2 and 3, remaining, a tree that appeared to be the weakest and most devitalized in the vicinity was thoroughly sprayed, and the ground about it saturated. Approximately ten gallons of the spray were appplied to the tree in this manner.

The results derived from this experiment in 1915, its second year, are much more marked than those obtained in 1914. A careful determination of the number of twigs producing blossoms that retained at least one fruit at thinning time, and at picking time (see table 1) shows a very marked influence to have resulted from the use of nitrogen. The manner in which the nitrogen was apnlied appears to have no relation to the amount of fruit retained by blossom bearing twigs. Approximately half as many twigs retained fruit at full maturity as carried it until the first of June, although at the earlier date many twigs upon the fertilized plats carried more than one fruit while only a small number carried more than one through the entire season. The percentage of loss of fruit from twigs on all plats between June and September, inclusive, was very similar. The trees upon which these determinations were made were not thinned.

Table 1, showing the set of fruit and yield of fruit, its size, the length and width of terminal growth, and size of leaves on check plat and plats fertilized with nitrate of soda:

No. of Plat	Plat 1	Plat 2	Plat 3	Plat 4
Treatment of Plats	Check plat, clean culture for 18 years.	Nitrate soda solution sprayed on trees, excess fell on ground.	Nitrate soda solution put on ground.	Nitrate soda crystals spread on ground.
Nitrate applied, 1914	None	6¾ gal.	6¾ gal.	6¾ ℔
Nitrate applied, 1915	None	6¾ gal.	6¾ gal.	6¾ ℔
Nitrogen applied each year, ℔	None	1.08	1.08	1.08
Total N. applied per tree, lb.	None	2.16	2.16	2.16
Total N. applied per acre, lb.	None	70.	70.	70.
Blossom twigs counted	483	890	542	794
% fruit set on counted twigs—				
June 4	35.3	69.6	68.0	82.6
Sept. 30	16.4	37.3	30.7	34.6
Average yield of note trees, loose boxes (1)	3.75	19.	21.5	17.
Av. yield per tree, loose bxs.	.9	10.09	9.97	10.01
Size of fruit—				
175-150 per box, %	76.24	24.61	22.64	8.28
138-112 per box, %	18.32	41.87	29.13	24.71
100 per box and larger, %	5.43	33.52	48.23	68.10
Av. of terminal growth, inches—				
1913.	6.7	5.	4.25	6.15
1914.	5.3	7.8	4.50	5.80
1915.	8.0	14.8	16.20	11.00
Diam. of terminal growth (2)	.172			.224
Size of leaves—				
Length, inches	2.25	2.8	2.2	2.75
Width, inches	1.35	1.65	1.5	1.60

(1) Trees with heavy set of blossoms were selected for this determination to render conditions as nearly uniform as possible.

(2) Measured 2 inches above the base.

The average yield of fruit per tree for plats 2, 3 and 4 which received equal quantities of nitrogen during the two years was approximately the same, being 10.09, 9.97, and 10.01 boxes respectively. The check plat yielded .9 of a box per tree.

In size of fruit there is not so close a relation between the nitrate plats. The largest apples were produced by the plat receiving the crystals, next in size by the plat having the nitrate solution applied to the ground and the smallest apples of the fertilized plats came from the sprayed trees. From the table (No. 1) it will be seen that a large portion of the apples, an average of 50 per cent are larger than are desirable for marketing, while 76 per cent of the apples from the check plat are equally as undesirable on account of being too small.

The fruit from the check plat was more uniformly colored than from either of those receiving fertilizer, although the highly colored apples from the latter were much brighter, and more easily polished than the ones produced upon the check plat.

Two hundred apples are being kept from the nitrate plats and check plat to determine their relative keeping qualities in cool storage.

The terminal growth of branches upon the nitrate plats have more than doubled. It is also shown that an increase has taken place in the terminal growth of trees in the check plat during 1915. This is doubtless due to the influence of irrigation which was applied to this orchard for the first time, the result being more readily apparent upon this than on the more vigorous growing plats (table 1.)

The size of the foliage on the fertilized plats is greater than that on the check, although the difference in size is by no means as pronounced as is the difference in color. Throughout the entire season all the trees receiving nitrogen were very dark green and vigorous in appearance while the others were yellowish and sickly.

So great was the difference in the color in this orchard that the fertilized plats could be seen from a great distance. There was also a very marked difference in the attitude of the trees. The foliage and crop of the check plat trees was so light that the branches stood up as in winter and were no barrier to people and teams passing beneath while the branches of the fertilized trees were so weighted down with foliage and fruit that it was difficult to get through, and a team could only be taken between the trees in a very few places.

Clean cultivation was continued in this orchard in 1914, but clover and alfalfa was planted in 1915 and irrigation water applied for the first time. The factor of irrigation has had but little apparent influence upon the comparative results as it was applied uniformly to all the plats excepting No. 5, which, by virtue of its shorter duration does not enter into this comparison.

Plat 5 was fertilized at the same time as the others, March 13. Although the weather was cloudy and threatening there was not sufficient precipitation to cause the nitrate to be washed from the branches to the ground for a number of days after it was applied. The land about these trees was cultivated in the spring after which it was left unstirred. It was irrigated once very lightly, one furrow to the row, and the water allowed to run but a short time.

The vitality of these trees had been so far reduced by drouth and starvation that blossoms were not produced in sufficient quantity to permit a determination of the set of fruit being made. The comparative effects of the nitrate spray applied to the tree alone and to the tree and ground about it are very pronounced. Table 2 shows the comparative vigor of the check plat trees, those having the aerial parts treated with nitrate solution, the one to the top and soil of which the nitrate was applied, and those fertilized for two years with nitrate of soda as indicated by the length and thickness of terminal growth and length and width of foliage.

Table 2, showing comparative length of terminal growth and size of foliage of trees sppraye with N. over canvas and of tree liberally sprayed with the same solution on ground and tree.

Treatment of Tree.	Length of Termnal Growth in Inches. 1911	1912	1913	1914	1915	Diam. of terminal growth in in., 1915.	Size of foliage, 1915.	
Check trees, no fertilizer, average of 2 trees.....			6.7	5.35	8.55	.18	2.25	1.35
Nitrate of soda, 1 pound to 1 gal., sprayed on tree and excess kept off ground, 2 trees....	11.	8.75	6.0	3.85	3.75	.13	2.32	1.46
Very weak tree liberally sprayed with nit. sol. on tree and soil.......	14.6	10.3	4.8	2.2	15.	.20	2.40	1.5
Average of nitrate plats 2, 3, 4................			5.13	6.01	14.	.224	2.58	1.58

From this it can be seen that the growth of the sprayed trees is much shorter than that of the check trees which received no fertilizer, but more water. It is much less than that of the tree heavily fertilized once, which is similar in growth to those receiving a smaller amount of nitrogen each year for a two year period, and more water this year than the other.

There is not so striking a difference in the size of the foliage, however, that on the fertilized trees is largest. The color and general appearance of foliage on these respective areas is quite pronounced. The tree fertilized but one year presents as vigorous an apparance as those that have been treated longer, and those that received the nitrate on the branches alone are not perceptibly more vigorous than the check trees that have received no treatment, in fact they are less thrifty.

All the trees to which nitrate of soda was applied in 1914 at the rate of 6¾ pounds appeared to have been returned to full normal vigor. The second application, as is indicated by a heavy wood growth in addition to the production of a heavy crop of fruit in 1915, shows that 1 pound of nitrogen each year is too large an application for each tree. Fully 1 pound of nitrogen should be applied the first year, but subsequent applications should be not over half as heavy.

By this carefully conducted and thorough test to find if nitrogen applied in liquid form to the tops of fruit trees has a stimulating effect upon the tree not one indication has so far been found that it has. On the other hand it is plainly shown that regardless of the manner in which the element is applied to the soil, whether in liquid or crystaline form, it gives very strong and prompt invigorating influence to the plant.

This determination, although startling in its effect upon the yield and vigor of fruit trees appears to be of no great scientific importance.

However, it is of very great economic significance owing to the important practical problems upon which it throws a strong light. The three most important results of the work are: (1) It shows plainly the extent to which the nitrogen store of the soil has been depleted by the long continued system of culture that has been practiced, and the great rapidity with which the trees can be restored to normal vigor by application of this element. (2) As no beneficial influence of sufficient importance to be observed has resulted to the physical character of the soil from the application of nitrogen in the form of nitrate of soda the use of nitrogen in this form should be very limited. It finds its greatest value for the purpose of stimulating very weak trees until such time as leguminous crops can be grown and turned into the soil. (3) When nitrate of soda, as a source of nitrogen for devitalized and unfruitful fruit trees, is to be applied it can be done more cheaply and with equal results by distributing the crystals upon the ground in early spring and working them in instead of going to the expense of preparing a solution and applying it in the form of a spray.

The cost of nitrogen in nitrate of soda applied at the above rate is approximately $16.00 per acre. An average crop of vetch, which can be grown for $10.00 or less, accumulates about 74 pounds of nitrogen, approximately as much as was applied to these trees. In addition to the benefit derived from incorporating the vegetable matter into the soil the nitrogen can be acquired more cheaply by growing legumes than by purchasing commercial nitrogen. By the proper use of livestock a large portion (possibly 80 per cent) of the fertilizer value of forage consumed should be returned to the land and a moderate profit derived from feeding it.

Nitrogen in its various commercial forms should not be generally used. It is desirable for extreme cases only, as similar and far more permanent results can be gotten by the use of leguminous crops. Not only does the application of nitrogen bearing organic matter supply the much needed nitrogen to the trees, but it exerts a very beneficial and lasting effect upon the tilth and waterholding capacity of the soil. A very striking example of the influence of clover upon the condition of the soil and the growth of trees upon it exists in a Hood River orchard in which a portion of the land was devoted to clover previous to planting of the trees. Although the trees are about 18 years of age the soil is in better physical condition and the trees are considerable larger than in the remainder of the orchard.

The system of cropping that should be used depends largely upon the available supply of moisture. Where irrigation is not provided for use of winter cover crops of common vetch (V. sativa), or hairy vetch (V. villosa) should be used. This practice followed by systematic clean cultivation throughout the summer will maintain the fertility of the land and result in the greatest possible economy of the limited supply of moisture, all of which will be needed by mature fruiting trees.

Upon irrigated land more or less permanent crops can be grown in the orchards as has been partially demonstrated in all parts of the district. The crop that is of greatest value for use in the orchard has not yet been fully determined.

Red clover has many advantages over alfalfa for use with fruit trees in the orchard. Clover is preferable to alfalfa in a minor way on account of its greater tolerance of shade and cool weather and consequent longer period of growth. The principal feature in which clover is superior to alfalfa is the influence it has upon cultivation of the soil by its habit of dying out at the end of the second or third year.

Frequent thorough stirring of the soil is very necessary for many reasons; the principal of which are to permit its being properly aeriated, which process is vital to the life and activity of myriads of bacteria whose function in the soil is to bring about the decay of organic matter with its consequent action upon the many elements of plant food within the soil. Where alfalfa is used the tendency is to not cultivate the soil sufficiently. Once this crop is well established the land can be thoroughly worked at frequent intervals with no appreciable injury to the plants, but it is seldom done.

One of the greatest benefits to be derived from the growth of leguminous crops in orchards are those resulting from the influence of the vegetable matter upon the physical condition of the soil and from the result of decay of this material rendering its chemical constituents available as food materials for the trees whose welfare they are designed to influence. The sooner crops are plowed into the soil and allowed to decay, the sooner will their beneficial influence be felt. The refrigerant effect of the shade of such crops and the application of irrigation water appear to have a beneficial influence upon the trees. This and the possible influence of legumes being associated with non-legumes frequently exerts a marked influence upon the appearance and vigor of trees before an appreciable amount of plant material has decayed upon or within the soil.

A splendid example of what can be accomplished by the proper use of cover crops is the orchard owned by F. R. Radford, which is upon a soil very similar to the above experiment. When his orchard began to show signs of distress, some seven or eight years ago, he began immediately to use winter cover crops, and continued systematic clean culture during the summer season. During the past three years he has applied irrigation and is growing clover and alfalfa. He has also gone over the entire tract with a light application of stable manure. As a result of this careful treatment three successive crops of fruit have been received, and the trees are quite vigorous and thrifty in appearance.

Indications are that in this orchard, while bearing full crops of fruit, the trees are being forced into too strong wood growth. From this it appears that too great an amount of nitrogen is being supplied to them. Thus it appears that the use of leguminous cover crops can be overdone as well as can the use of commercial nitrogen.

Upon the appearance of such a condition the crops should be dispensed with for a time and systematic clean culture again brought into practice. These results suggest the feasibility of adopting, within the orchard, a systematic system of crop rotation planned to maintain the fertility of the soil by growing certain crops on different portions of it in regular succession. Such a practice would be a most valuable method of operating an orchard, for by its use sufficient forage could be grown for the stock necessary upon the farm and the labor would be equally distributed throughout the year and from year to year. It would also foster economical and constant use of irrigation water, and, in the end, would bring about a most accurately balanced series of farm activities which condition is condusive to the greatest possible economy in operation, a factor which I consider to be next in importance to the maintenance of a desirable state of fertility within the soil.

President Washburn: Do you consider inoculation of the soil or seed necessary for getting a stand of clover on a coarse, sandy soil?

Mr. Allen: When the soil is not acid, and such a soil should not be, inoculation is of much less importance in getting a stand of clover than is the maintenance of a proper moisture condition to foster uniform germination and to insure the growth of small seedlings. Inoculation is of less importance for such soils, having a liberal supply of organic matter for those which are devoid of it.

Question: Would you advise the use of clover in orchards in the Willamette Valley?

Answer: Not under ordinary conditions.

Question: By what means would you advise improving orchard soils here?

Answer: By the use of winter cover crops, such as vetch. Where irrigation is not possible, permanent crops, such as clover and alfalfa should not be grown in the orchard as the usual summer season is too long for an average or normal soil to yield sufficient water for both the trees and clover to thrive upon. Winter cover crops and systematic clean culture in the summer is the most successful method for lands not subject to irrigation.

Question: Would you recommend the use of nitrogen for devitilized prune trees in this part of the state?

Answer: Nitrogen should be applied to such trees to return them quickly to normal vigor, but its use should not be continued. As soon as it is undertaken to properly handle such trees, cover crops should be resorted to as it is the most desirable means of maintaining vigor to growth.

Question: Do you consider the nitrogen to be a stimulant or a fertilizer?

Answer: I consider the nitrogen to be a fertilizer, but on account of the great need of these devitilized trees for the element, it has acted as a very strong stimulant.

Question: How early should such a fertilizer be applied?

Answer: As soon as it can be worked into the soil. It should be there ready when the plant begins its spring activity.

Question: We applied nitrate of soda to nursery stock last spring early and did not receive any benefit from it.

Mr. Washburn: Perhaps the soil did not need it.

Mr. Allen: Under certain conditions but little benefit results from the application, especially upon soils containing a liberal amount of organic matter.

Question: How much nitrate per acre would you recommend using on a seriously devitilized prune orchard, having trees about 18 feet apart?

Answer: I believe that 200 to 225 pounds per acre would be about right for the first year. If it is needed at all after that the amount could best be judged by the influence of the first application.

Prof. C. I. Lewis, "The Possibilities of Diversification for the Fruit Grower."

DIVERSITY IN FRUIT GROWING

Address Before the State Horticultural Society Meeting, November, 1915

By Prof. C. I. Lewis, Chief, Division of Horticulture, O. A. C.,
Corvallis, Oregon

We have recently completed a study of the cost of production of apples in a thousand orchards in the Pacific Northwest. In making this study, we gave special attention to the subject of the possibilities of diversifying the fruit grower's interest. We realize that the production problem simmers itself down quite largely to the proper utilization of labor and teams and the maintenance of an acreage which guarantees cheap production.

The amount of diversification that a man can undertake depends very largely upon the acreage of fruit which he maintains and the amount of capital, time, and general facilities at his disposal for other lines of endeavor. Possibly the best form of diversification for the fruit grower is to diversify more in his own line. Namely, instead of devoting his entire attention to the production of one type of fruit, such as apples, or walnuts, it would be better that he grow a number of types, thus distributing his labor and bringing in cash incomes at various seasons, and eliminating to a certain degree, the possibility of lean years. For example, in the Willamette Valley if he has a prune evaporator, black-cap raspberries or loganberries, prunes, and English walnuts could all be dried in the same building and would not interfere with each other. For the slack time which would come in August, he could have Bartlett pears raised for the cannery, or he could take such a combination as berries, prunes, apples or walnuts. In a section like Hood River one could grow such crops as strawberries, cane fruits, cherries, pears and apples. For The Dalles, early berries, cherries, peaches, apricots, green prunes, grapes and some truck garden crops. For the Freewater, Milton district, dewberries, strawberries, early garden truck crops, peaches, green prunes and apples. These are merely some of the crops to raise. Others could be raised, and we could work them out for different sections of the Northwest.

To the fruit grower who contemplates taking up general agriculture in connection with fruit growing, I would warn him against overdoing this proposition, for, unless he makes a careful study of the proposition and is a good business man, he will only lose money, rather than add to his receipts. The great danger to a man who goes into general farming and at the same time attempts the production of fruit, is that his fruit will be of very poor quality. Often Western people point to the diversity of certain Eastern fruit growers, but they fail to remember that these same Eastern fruit growers produce very ordinary fruit —fruit that would not pay a Western fruit grower to pay the freight on. It is very doubtful if, on high-priced land, there is a single agricultural production that will pay better than fruit properly grown, and the man contemplating diversification, needs to give a little attention to the question of cheap production, and efficient business management. On the other hand, the general farmer should go into fruit growing cautiously. There are some exceptions, however. The prune, for example, can be grown very nicely by the every day farmer and is today the best cash crop on a large percentage of the farms in the Willamette and Umpqua valleys.

The loganberry is another crop which the dairyman or general farmer can grow in connection with other crops, and the English walnut offers a fair field. Occasionally we find a man handling peaches and canning pears successfully, but there are very few general farmers who make a success of apples, pears and sweet berries.

Every orchardist should attempt to produce as large a percentage as possible of food consumed on his ranch. This means he should keep a good family cow, at least one pig, a small flock of chickens, and should maintain a good garden, in which will be found abundant supplies of asparagus, rhubarb, small fruits, potatoes and seasonable vegetables. From such a combination he ought to be able to sell a considerable excess to advantage.

We will now consider the various opportunities for diversification and the first we will consider is that of forage crops in irrigated sections. For example, clover and alfalfa, and similar crops, can be easily grown in the mature orchards. Our survey, however, points out that when these crops are produced as hay, very little money can be made, and that the most money from these crops is realized when they can be pastured by such animals as hogs or sheep.

Sections fortunately situated near good markets can engage to a limited extent in the production of high grade truck garden crops. However, the market is limited and it is only occasionally where one can realize money under conditions where it is necessary to employ practically all the hand labor.

For irrigated districts, the strawberry has shown itself to be the best money producer. We must admit that sometimes it is a little hard on the trees, but there are many fruit growing sections that would be better off if they always reserved a portion of their land for the production of such fruits as the strawberry.

The potato on the whole has not been very profitable. Occasionally an orchardist makes money, but more of them lose. In only a small proportion of the orchards do we have the right combination of soil and climate for good potato production. A few growers producing seed potatoes have made money. Some of the men in the Grande Ronde Valley have done well in this way.

It is very rarely that grain or grain hay can be grown profitably among fruit trees. The greatest value of the grain would be to check over vigorous trees that are not bearing, but which should be producing commercial crops.

Live Stock in the Orchard.

When marketing conditions are right, the hog represents one of the best propositions for the fruit grower to consider. This is especially true in Western Oregon, where abundant crops of turnip, vetch, rape, etc., can be grown as winter pasturage and where the soil will stand such pasturing. The hogs are turned off in the spring. Where cheap grain, such as wheat screenings can be procured, hogs have been produced very satisfactorily by some of our orchardists. Where summer pasturage must be resorted to, the question is a little more complicated and the grower is often forced to unload his pork on a very poor market. However, in some of our experiments we have secured very satisfactory results. In a test which we tried at the Umatilla Experiment Farm, at Hermiston, the following results were secured:

Alfalfa Pasturing Experiment.

For the purpose of determining the comparative value of alfalfa hay and pasture produced by equal areas of land planted to orchard, one-half acre of four-year-old alfalfa was taken. The soil and stand of plants were uniform and no grading was done preparatory of seeding.

The tract was equally divided into one-fourth acre fields, one-half being set aside for the production of hay and the other fenced for pasturing.

The pasture plat was divided into two parts of one-eighth acre each. A small shelter and water-barrel were placed at one end of the dividing fence in such manner that, by changing the free end of one panel from one end to the other of the shelter they could be thrown into either of the plats.

Owing to the flume leading to this land being small, water could not be applied to the entire experiment at one time, but it was irrigated regularly at intervals averaging about 12 days in length New furrows were made in the hay ground after each crop was removed, and in the pasture plats before each irrigation.

Four crops of hay were cut from one-fourth acre, which yielded as follows:

First crop, May 22	848 pounds
Second crop, July 6	838 pounds
Third crop, August 3	534 pounds
Fourth crop, September 28	430 pounds

Total ....2650 pounds, or 5.3 tons to the acre. A yield of 5.3 tons is considered large for coarse sandy soil not influenced by ground water.

The first lot of hogs purchased for use in this experiment were farrowed Sept. 15, 1913, making them 194 days old. They were from the first litter of a young Duroc sow. The sire was of the large type Poland China and both parents were of good breeding. Hogs of the second lot were very similar in every respect to those of the first. Although not large for their age they were thrifty and in good flesh when put on the pasture.

Results for Season.

Average gain per day	3.01
Average daily gain per hog	.75
Grain fed	1,883
Pounds pork per acre per day	12.4

Total number of days alfalfa was pastured, 190.

Number of hog days for one acre of alfalfla, 3,040.

Total pounds pork produced by ¼-acre of alfalfa with addition of grain equals, 573, which is equivalent to 2,292 pounds to the acre. At 7 cents this amounts to $160.44.

After deducting $28.25, the cost of 1883 pounds of grain (rolled barley) fed, at $30 a ton, leaves $11.86 to the credit of ¼-acre of alfalfa. This equals a rate of $47.44 an acre for the alfalfa by pasturing under the above conditions which were no more favorable than are found on several farms on the project at the present time.

At $7.00 a ton, which is the sale price of loose hay, an acre income of $37.10 was received. The value of each ton of hay in terms of alfalfa used as pasture, in view of the above results, would amount to $8.95. At $7.00 a ton for hay, and $8.95 a ton for hay when used for pasture gives an increase in value of $1.95 a ton, or $7.80 an acre for pasture over that of hay. During one week in April small amounts of alfalfa were cut from an adjacent field and fed to the hogs on account of cool weather checking the growth of forage on the pasture plat. No record was kept of the quantity used, but as it was very small it would make only a slight difference in results of the experiment.

In the above figures no estimate or consideration is made of the comparative labor requirements in producing hay or pasturing. From the farmer's point of view the pasturing gives a better distribution of labor and, if somewhat more expensive in amount required, being more evenly distributed, would, on many farms, be cheaper than the irregularity and inconvenience of gathering haying crews for short periods of service.

The value of retaining the organic matter resulting from grain fed and forage produced upon this land and having it well distributed over the surface in the form of manure is an item of considerable importance in this district. All that can be gained in buying grain in quantity is clear profit. In order that the greatest profit can be had from pasturing, grain (which is necessary for maximum returns) should be bought directly from the producer and in large quantities. Where a return of $47.44 an acre was got for alfalfa pastured by feeding grain at $30 a ton, a saving of $37.68 would have been made by feeding grain at $20 a ton, and an acre return of $85.10 realized. From 1.5 to 2.5 pounds of grain should be fed daily for every 100 pounds of live weight. One and one-half pounds, or 1.5 per cent was fed in this experiment.

For the comfort, protection and health of the animals substantial shelter should be afforded and the quarters kept clean and well disinfected. Fresh water and some form of mineral matter should be kept available at all times. A combination of soft coal, or charcoal, salt, and small amount of sulphur, kept in a small trough in the lot, is valuable to keep the animals in good thrifty condition.

The grain should be fed twice a day and the animals frequently changed from one plat of alfalfa to the other to keep them on succulent feed and get a maximum growth of forage. If not fed down closely, the alfalfa stubble should be clipped as soon each time as hogs are removed.

In a Hood River experiment this past summer, thirteen hogs, Duroc, averaging 73.5 pounds, made a total gain of 241 pounds in 32 days. This amounts to individual gain of 18.5 pounds and an average daily gain of .57 pounds per hog. This gain was made on clover pasture alone.

For a thirty day period on clover with .5 pound grain (rolled barley) per hog per day they gained 13.8 pounds per hog, or 44 pounds per day.

During a 58 day period on the same clover and field peas which were mature, the same hogs made a total gain of 44.8 pounds, which amounted to a daily gain of .77 pounds.

For the period of 120 days these animals made a daily gain of .64, amounting to an individual gain of 77.2 pounds and a total gain for the period of 1,004 pounds.

As the hogs were of excellent stuff for such an experiment they no doubt did well under the conditions; however, they did not have sufficient grain to make maximum gains. With about 2 per cent of grain they should have made 1 pound gain a day.

As they ran over three acres of clover and fed off four acres of peas in company with twenty head of smaller animals it is impossible to determine what income they yielded per acre of clover, or of peas.

The question is sometimes asked, will not the hogs damage the trees? Yes, quite frequently they will injure young trees and there are certain individuals that need watching or removing from the orchard. However, if there is an abundance of feed and good varieties, there is less danger. If the apples get heavy enough so as to bring the branches near the ground, hogs will often shake off large quantities of fruit. One should not try to overclass the orchard. The cull fruit is of questionable value. It is, however, worth something, but is poor for fattening.

Dairying.

It is exceedingly hard for an orchardist to engage in dairying on a large scale. There are a few exceptions, however. For example, a man who has abundant pasture and can raise plenty of feed, sell his milk at retail prices, and provide proper barns and pasture for his stock will often make money. His herd however, must be superior and he cannot afford to buy much of the food the cattle consume. An orchardist can often make very good money on from one to three cows, and begin to lose money when he attempts more. The average cow which the dairyman offers the orchardist is of very questionable value. Very few men are temperamentally suited to handle both fruit and cows successfully.

Poultry.

A small flock of chickens should be found on every orchardist's ranch. It is only in exceptional cases, however, where large flocks of chickens will pay. If large numbers are kept, it requires much attention and most orchardists feel that the element of grain is a factor which keeps them from going into the industry extensively.

Sheep.

I have felt that possibly it would pay some of our orchardists who have good crops of clover and alfalfa, to attempt sheep fattening. There are sections of the Northwest where sheep can be secured in the spring of the year quite easily. There are other sections where people would be glad to lease pasturage. We have tried an experiment with sheep this past year at Hood River, but hope to try it more extensively in the future. The report of this year's experiments is as follows:

Eight head of ewes with lambs can be handled on three acres of good clover in orchards. The ewes made practically no gains as they suckled the lambs throughout the determination. Our figures show that eight head suckling lambs that averaged 26 pounds when put on clover with mothers (single lambs) made an average daily gain of 1.2 pounds each for a period of 52 days. No correction has here been made to cover gaunt condition of animals at first weighing, and full condition at final weight.

Horses.

Where the fruit grower has some pasturage raising abundant hay and grain, it will generally pay him to raise his own colts, and sell off his work horses at the time they will bring the most money, and always break in new colts for his own work. It is doubtful, however, if it will pay if one has not the feed and pasture.

APPLE SCAB CONTROL IN OREGON

By H. P. Barss, Professor of Botany and Plant Pathology, Oregon Agricultural College, November 16, 1915.

Reports from different parts of Oregon during the past season indicate that apple scab has been unusually severe in many sections. The loss due to this disease alone will probably amount this year in rough estimate to over $300,000 in this state. In many an unsprayed orchard there could not be found a single scab-free fruit this year, and even in orchards where the owners did spray, there was often a seriously high percentage of scab, sufficient in some cases to remove all trace of profit from the ledger. The question arises as to whether these conditions must continue to exist. Is it really necessary for every particularly bad year to take this terrific toll from the Oregon orchardist? I am confident that there is no need of it. For several years the College has been conducting investigations on the control of apple scab and at the same time has been watching the work done by practical growers in this direction. From the results of these investigations and observations, the conclusion is forced upon us that no matter how bad the year may be for this disease, the intelligent application of our present knowledge will result in satisfactory control.

So much has been written and said on the subject of Apple Scab, that there is no need of describing the disease in detail. You understand that the parasitic fungus which causes it, lives through the winter in the dead tissues of the fallen apple leaves, and that in the early spring a crop of spores is matured which are shot forcibly out of these old leaves and then, caught by the lightest air currents, are carried to the newly developing foliage and fruit, causing on them the first scab infections of the season. It was for a long time thought that this crop of spores did not mature until about the time the blossoms open and that infections could not occur earlier. In Oregon, however, we have found that at least in some seasons these spores may be mature approximately a month before the blossoms open. Under such circumstances if the weather conditions are favorable infections may occur before the cluster buds are fully opened, often a considerable time previous to blossoming. These first infections will develop into typical scab spots on the young leaves and flower parts and in a week or two there will be a new crop of spores produced in these spots which, as you are aware, usually result in an exceedingly rapid spread of the disease in the orchard, attacking fruit and foliage alike.

There is now no longer any doubt regarding the natural conditions which make possible the spread of the disease. Moisture is absolutely necessary for the germination of the spores and those climatic conditions which enable the dew, rain, or fog to remain upon the leaves or fruit for a considerable number of hours in succession, make is possible where spores are present for those spores to sprout and send their delicate germ tubes through the cuticle, after which the infections will take care of themselves. Anything that promotes rapid drying of foliage tends to prevent infection. Wind and sunshine, even though interspersed with showers, are unfavorable to the disease, while cloudy or misty weather with little wind, even though there be practically no rain, makes possible abundant spore germination.

Years ago, before the nature of this disease was yet fully understood, an effort was made to find some means by which it might be prevented. Bordeaux mixture had been found of such value in connection with certain other plant diseases that it was naturally one of the first materials tried out as a spray for the control of this malady. As long as twenty or twenty-five years ago in the eastern part of this country Bordeaux was shown to be decidedly beneficial, and the large number of tests carried out since that time all over the United States leave no doubt as to its efficacy for scab control in the mind of any one familiar with the results. There was, however, one drawback in connection with Bordeaux mixture wherever used, namely, the tendency under certain conditions to cause russeting of the apple fruit. It was thought at first that the mixture was being used too strong, but experiments demonstrated the fact that injury would occur when weak dilutions were used and it was found that this could not be prevented by any change in the proportion of the ingredients. It was found that this injurious effect was present only on fruit sprayed when young and it is now further understood that moist weather following the application of Bordeaux mixture provides the most favorable conditions for the appearance of russeting.

With the introduction of lime-sulfur as a fungicide, experiments were begun throughout the country, to test its usefulness as compared with Bordeaux mixture for the prevention of apple scab. It was a great satisfaction to find that this new spray material was really effective for this purpose and that it did not produce on the fruit the objectional russeting caused by the other. Lime-sulfur has consequently superceded Bordeaux throughout most of the apple-growing sections of the country for scab control. Lime-sulfur, however, is not perfect in all respects, for in the higher strengths it will cause burning of apple foliage and even in the lower dilutions, particularly with drenching, it may result in injury to foliage, although this is not usually of great importance. Under certain conditions, however, the injury may be quite severe and in addition to scorch on the leaves there is also a serious tendency to cause sunburn on the fruit in hot weather. Complaints of the trouble just referred to come, I believe, largely from sections subject to at least occasional spells of very high temperature.

Other fungicides are now being tried out experimentally over the country and new combinations of fungicides as well, in an attempt to find a suitable spraying program which will give the desired control of scab and avoid at the same time the injuries which have been mentioned. The Agricultural College has been making tests for the past two years under the direction of Mr. Winston at the Hood River Branch Experiment Station and some interesting facts bearing upon the problems of scab control have been brought to light. Some additional investigations in which the writer was assisted by the horticlutural inspectors of the state have laid bare many of the reasons for lack of success in scab control and have pointed out the way to remedy some of the difficulties.

In connection with the work on apple scab in the Hood River Valley it was found that the period of most abundant scab infection in 1913 occurred in the latter part of June. In the following year, on the other hand, the most serious infection occurred previous to the time when the flower buds showed color. Furthermore, during the season of 1915, the most disastrous infection occurred as a result of a long rainy period commencing perhaps two weeks after the petals began to fall. Each year there were a great many growers whose apple crop suffered badly, but at the same time each year there were some whose appples were practically clean. Investigation showed that the men who had clean fruit were those who had made an application of fungicide not long before the critical period. This is illustrated also in one locality in Southern Oregon where during the past season, there was a spell of wet weather favorable to scab four or five weeks after the bloom fell. In an orchard where the owner gave the usual four applications there was but 5 per cent of scabby fruit. Another grower in the same district gave three sprayings, with excellent control as far as he went, but omitted the fourth application. After the rainy period referred to, 70 per cent of his fruit developed scab spots.

It is evident, from these examples, that in Oregon there is such variability in weather conditions through the spring that in order to be certain of a clean crop the grower must protect his trees by a suitable fungicide **throughout** the entire season from the time the buds begin to open until all danger of scab-favoring weather is past, or else he must acquire more skill as a weather prophet than most of us ever hope for.

In addition to the poor results which have come from failure on the part of growers to keep their trees protected at all times during the dangerous period, we must mention the poor results that are attributable to lack of thoroughness. There are abundant instances in our apple-growing sections where two neighbors using practically the same spraying schedule will have entirely different results as far as scab control is concerned simply because one has always done the work thoroughly while the other has not. Too great emphasis cannot be laid on thoroughness. Growers must understand clearly that any portion of the surface of a fruit or leaf not covered with spray mixture naturally remains unprotected against infection. A spore can germinate and penetrate fruit or foliage at any point where no fungicide has been deposited.

I wish to call attention to the desirability of destroying or plowing under the fallen leaves. Wherever this has been thoroughly done there seems to have resulted a marked diminution in the primary spring infections. I doubt whether it is possible to do so thorough a job, however, that spring spraying could safely be abandoned; but present evidence indicates that it is a desirable practice which ought to be encouraged. It may perhaps be possible to destroy the fungus in the fallen leaves by some spray applied to them after they have fallen, but experiments with the standard fungicides have given negative results. These, however, form a practically insoluble coating on the exterior of the leaves and would not be likely to have any effect on the fungus which in this stage lies protected within the leaf tissues. My attention, however, has been called to an orchard in the Willamette Valley badly affected with scab last year where the owner sprayed part of it this spring just as the buds were swelling with pure bluestone (copper sulphate) at the rate of 2 pounds to 50 gallons of water, while part was left unsprayed. No further fungicidal application was given. It is reported that on the sprayed section 85 per cent of the fruit was free from scab while the unsprayed part yielded 75 per cent of scabby fruit. The only explanation I have to suggest is that the application of copper sulphate reached the ground covered with old leaves and penetrating these killed the fungus, thus preventing spore production from them and the consequent early infections. I give this to you for what it is worth, since the case did not come under my direct observation and the method has, as far as I know, never been tried out experimentally. I believe it worth further investigation, however.

Regarding the use of different fungicides, our experiments in the Hood River Valley have shown that various results may be expected according to time of application and the conditions to which the trees are subjected. We have found that Bordeaux and Lime-sulfur cannot be surpassed as fungicides, but injury may be expected under certain conditions to which I have already referred. Soluble sulfur has given us severe defoliation at the usual strength as has been the experience of many growers and of other experimenters in different parts of the country. Atomic sulfur is not likely to cause much injury when its use is began while the foliage is young, but in cool weather it seems to be much less efficient as a fungicide than the standard materials, while if the first application is made late in the sprng, accordng to some growers, a considerable leaf-dropping may follow. A new preperation tried out for only one season, Barium-Sulfur, seemed to give a fa satisfactory scab control with the least injury of any substance tried. Further tests, however, should be made before any general adoption of this material can be advised.

It is evident from the foregoing that the intelligent grower must base his spraying methods upon a knowledge of the disease, and the factors that influence it, together with an understanding of the materials that may be employed for fungicides and the conditions under which they may be safely used. There is absolutely no question but that apple scab can be successfully controlled anywhere in Oregon if the fruit and foliage are properly protected. Spray injury may not always be avoided, but much of it can be prevented by a wise selection of the material to be used at any particular stage.

Present Recommendations.

We have found that in our scab control experiments lime-sulfur gave better results with less injury than any other fungicide which has been used throughout the season and we therefore recommend it to those who prefer sticking to one kind of material throughout.

The first application for safety ought to be given just after the cluster buds unfold and before the leaves get to be much larger than squirrels' ears. This "semi-dormant" application gave an increase of from 30 to 60 per cent in clean fruit over plots sprayed first in the "pink" in one of our Hood River orchards this year. We used lime-sulfur, 1-20, and added a nicotine sulphate preparation to take care of the insects. Some burning was experienced and possibly a slight dwarfing of the first leaves, but the injury was insignificant in view of the benefit derived.

The second application should be made in the "pink" stage, that is—just before the blossoms open. Here we used lime-sulfur, 1-35, with good results. Bordeaux caused russeting in our plots last season where used at this time contrary to the usual expectations.

The third spray is the "calyx" spray applied when most of the petals have fallen. Lime-sulfur, 1-35, with arsenate of lead added for codling moth should be used.

The fourth spray should be given about "ten days" later. Under average conditions lime-sulfur, 1-35, seems to give the most satisfactory results.

A fifth spray ought to be applied a month after blossoming and where the down has disappeared from the fruit, especially in the case of varieties not extremely subject to russeting. Bordeaux may be used in the 3-3-50 or 4-4-50 strength. I am convinced that the omission of this application is not safe in most Oregon apple sections. Lime-sulfur 1-35 may of course be used where burning is not feared.

The summer season is rarely favorable to scab and where the orchard has been well taken care of in the spring there will be little trouble from serious new infections in the average fall. It would be safer, of course, to protect the fruit with an application of Bordeux or Lime-sulfur sometime in August or early September. I have a feeling also that if the foliage were well covered in the fall from the start few leaves would receive the infections which ordinarily result in the development of the winter stage. In other words, the primary spring infecton might be materially reduced. The majority of previous experiments with fall spraying, have, I suspect, began too late to be effective.

During the past season, bad as it has been, many growers from different sections of the state have secured a crop of 90 to 95 per cent clean fruit when their neighbors had only 5 to 25 per cent free from apple scab, with only spraying to account for the difference. Whenever there was failure in spraying it is attributable in practically all cases either to failure to have the trees protected at some critical time or to lack of thoroughness in doing the work. Apple scab can be controlled in this state or any other when "the right materials are used in the right way and at the right time."

ENGLISH WALNUT CULTURE IN THE PACIFIC NORTHWEST.

A. A. Quarnberg, Horticulturist and Nut Experimenter,
Vancouver, Wash.

The English walnut or Persian walnut is a thrifty, fine growing tree with clean light gray body, symmetrical head and dark green foliage, and, under favorable soil and climatic conditions attains great size and long life. While being decidedly ornamental and filling the requirements for a first class shade tree, it is planted chiefly for its valuable nuts, and, where it succeeds well, its culture should take a prominent place among the industries of the country.

English walnuts are a nutritious and wholesome food and while formerly used mainly for dessert and confectionery purposes they are now fast coming in favor as a regular article of diet and more used in many substantial table preparations. They may also be converted into a valuable oil used both as a food and a medicine, and, immature walnuts when tender and entirely free from woodiness may be used for pickles, catsups, etc. By reason of the many uses of walnuts their consumption in the United States has increased more rapidly than the production, and, with the present heavy importations there is but little danger of overproduction for some time to come.

We are just at the beginning of successful walnut culture in the Northwest; some progress has been made but there is much yet to learn. However, enough has been done to prove beyond a doubt that walnut growing here offers great opportunities for the future. With thousands of acres of land with soil and climatic conditions suitable for walnut growing we certainly should produce not only all the nuts consumed at home but to ship to other less-favored localities as well.

While experience has shown that under proper conditions the walnut will grow and bear in the Northwest so as to justify its planting, it must be remembered that walnuts cannot be set out anywhere and of any variety with assurance of success. Thousands of dollars have undoubtedly already been wrongfully expended in walnut planting on the northern Pacific coast, resulting in many failures and disappointments which could have been avoided by careful and intelligent selection of lands and varieties for planting. The first and most vital requisite for success in walnut growing is land with the proper soil and exposure; then, the selection of good, blight resistant varieties well suited to the locality, and, lastly, good care. Walnuts require deep, rich soil, the deeper and richer the better; in other words, they require soils well supplied with plant food and plenty depth to retain the necessary moisture during the dry season, yet, at the same time well-drained and free from standing water. Walnut trees cannot resist sour seepy soils, nor can they be expected to do much or resist the blight successfully on coarse, sandy, shallow and poorly watered lands without plenty of fertilizers and irrigation. Furthermore, the success of walnuts planted in a frosty locality, even with good soil, is very doubtful. Without good care of the trees the planter is surely doomed to disappointment.

There are mainly two distinct strains of walnuts grown on the Pacific coast: the Santa Barabara Soft Shell types, and the French varieties. The Santa Barbara types, while being vigorous and strong growers, but out early in the spring, are liable to injury by spring frosts and blight, and, generally speaking, do not succeed well in the Northwest. But the French varieties which begin their activities later in the season have shown themselves well suited to the country's condition, and have practically demonstrated the possibilities of commercial walnut growing in the Pacific Northwest.

Grafted trees bearing high grade nuts are to be preferred for planting on account of the uniformity of the product. While there are some fine and valuable second-generation seedling trees, these seedlings have not proven entirely satisfactory as they are sometimes found to vary in growth and productiveness and their nuts often differ in size, shape and flavor. If seedlings are planted they should be propagated from nuts carefully selected in every respect. Grafted trees should have select stock not only for the top but for the root as well, for, upon the root depends in a large measure the life and value of a tree. Good results have been obtained from grafts on Northern Californian black and Eastern black-walnut roots, as well as from strong roots of the English varieties and certain hybrids; but, while it cannot be expected that any one root will be the best under all conditions, the Northern California black is now by many considered to be one of the best average root stocks for English walnut trees in the Northwest.

The commercial value of a walnut tree depends upon its growth and productiveness and the size, shape, color, smoothness, sealing and self-hulling quality, of the nut; and, flavor, size, plumpness and color of the kernel. The old French varieties such as Franquette, Parisienne, Mayette, Meylan, and others, possessing in a high degree the qualities which make good commercial nuts, at present are and will probably continue to be, the standard selection for planting in the Northwest unless some new variety particularly adapted to the existing conditions and requirements should develop. At present, the Franquette seems to be the most popular and probably is one of the best, if not the best, varieties to plant. While it appears that good crops may generally be secured from the planting of the Franquette entirely, I am sure that they would be benefited by proper cross-fertilization, and, until the fertilizing characteristics of our standard walnuts are more definitely known, it seems to me that some intermingling of varieties which blossom at the same time would be safer and at least tend to better fertilization and consequently larger and better crops of nuts. In California several new varieties of reasonably well established merits such as the Concord, Wiltz-Mayette, Eurica, and others, have of late been planted quite extensively and some of them are also now being tried in the Northwest with promising results.

Under favorable conditions the English walnut trees attain great size, and, therefore, should not be planted less than 50 feet apart; on good land 60 feet is not too much for perfect development of the trees when nearing mature age. In urging a good distance between walnut trees and to show how necessary it is to have plenty of space, the great growth of three old European trees and one in Clarke County, Washington, may be cited. The Beachemwell tree in England had a height of 90 feet; spread, 120 feet; diameter of trunk, nearly 10 feet; and, a yield of 1,000 pounds of nuts a season. A tree in France lived to be at least 300 years old; had a spread of 125 feet; trunk, 14 feet; and, yielded 1,500 pounds a season. The giant walnut tree in Crimea reached the age of 1,000 years and for a long time yielded about a ton of nuts annually. The walnut tree on the Resch place about three miles north of Vancouver, Washington, now 32 years of age, has a trunk of eight feet in circumference; height, 52 feet; spread, 73 feet; and, this season bore 350 pounds of nuts.

With walnut trees planted the proper distance apart, many consider clean cultivation a waste of land while trees are young, and others must get something from the land for a living until the trees come into bearing, and, therefore, it often becomes desirable to interplant walnuts with other quick-maturing fruit trees as fillers, or to grow hoed or cultivated crops in the wide spaces between the rows. Such interplanting I do not consider especially objectionable, provided the fillers are removed when the walnut trees require the land, and, the hoed or cultivated crops are not planted close enough to rob the walnut trees of their necessary moisture and plant food.

For the best results the utmost care should be taken in the planting of walnut trees, and the less exposure, mutilation, and injury to the roots in transplanting, the better it is for the tree. When the land has been staked off, large holes should be dug to give the roots plenty of room and thereby facilitate their rapid development. For this purpose it is a very good plan to blast the holes with dynamite, especially when there is a layer of subsoil too hard for the roots to penetrate, or even check them in their downward growth, which in most cases seems essential to the best development of the walnut. This blasting should preferably be done in the autumn while the soil is dry, and is undoubtedly inexpensive and effective as one stick of dynamite placed three or four feet deep will crack up and loosen hard subsoils for severl feet around. One way to make holes for the dynamite is to drive a crow-bar into the ground; but, probably a better way is to use a soil auger which readily bores through even the harder subsoils. In planting the trees the ends of the roots should be trimmed with a sharp knife by smooth slanting cuts and the best soil should be carefully and firmly packed around the roots and also used as much as possible in filling the holes.

Young walnut trees require and respond to good care by vigorous rapid growth, and, unless the land is very rich it will pay to stimulate them with barn-yard manure or other fertilizers. Walnut trees are gross feeders and will readily take up almost any fertilizer and can hardly be over-fertilized. Most young, rapid growing walnut trees require staking and often it is necessary to train and tie up some branches to proper shape. They should be headed about five or six feet from the ground and for the first few years require attention to give the head the proper form, but after that need but little in the way of actual pruning.

Seedling walnut trees are somewhat slow in coming into bearing, but the generally accepted idea that the walnut is normally very late in bearing is not entirely true as grafted trees usually have a few scattered nuts three and four years from planting, and, sometimes, even sooner, and increasing annually thereafter with the age and size of the tree. It is reasonable to estimate that a good 15-year-old tree will produce on an average from 40 to 50 pounds of cured nuts a year; and, in favorable localities, crops, though some may be heavier than others, may be expected and reasonably depended upon every year. While the returns per acre from a walnut grove may not be as large or so soon realized as with some other fruits, it is on the increase almost indefinitely, and a staple price for walnuts is easier to maintain than with more perishable crops.

Walnut trees are comparatively free from insect pests, and aside from the walnut blight no serious disease has yet attacked the walnut. No variety can be said to be entirely free from blight, but the disease varies greatly with different varieties and different seasons. As yet no specific remedy has been discovered; the only solution to the blight problem now seems to be to keep the trees in good healthy condition, and to grow the most blight-resistant varieties with which the chances for loss will probably be no more than with other varieties of fruit.

In the Willamette and the Columbia River valleys walnuts usually mature and begin to drop about the last week in September, and most of the crop is generally harvested the first two weeks in October, so that by the middle of that month the walnut is completed. As the nuts mature the hulls crack open and the nuts usually roll out clean and drop to the ground or are dislodged by shaking the trees. They are then picked from the ground at least once a week during harvest time, and three or four pickings are generally necessary to gather the crop. When gathered the nuts are thoroughly washed in water and spread on trays to be dried in the sun or in a fruit dryer. In the sun walnuts will cure in about three or four days time; if left out over night the nuts should be protected from dews.

Walnuts are one of the few crops which is rather benefited than damaged by rain during harvest time; provided, the nuts are not allowed to remain on the ground long enough to mildew and discolor. In wet weather walnuts must be dried in well ventilated dryers with heat from 80 to 90 degrees Farenheit; high heat will start the oil and injure the meat and flavor of the nuts. Good nuts may be spoiled in drying, and proper curing is an important part of walnut growing. Thus far Northwestern grown walnuts have been sold without any kind of bleaching; most of the French varieties do not really have to be bleached to sell rapidly on the market. After the nuts have been properly cured, the test of which is a brittle meat, they are assorted and graded ready for packing and marketing. It is a singular fact that the Northwestern grown walnuts are usually cured and ready for the market about the same time as the Santa Barbara soft shells are in Southern California.

In conclusion, it should be said that the walnut should appeal not only to the orchardist but to the general farmer and town-lot owner as well, and all should have a few trees where they will grow. The culture of English walnuts is attractive in many respects; they are a reasonably sure crop; they do not require an immediate market; they are well known, and there is always a demand for them at fair prices. The trees are out of the ordinary in that they combine the ornamental, the useful, and the profitable in the highest degree possible. Thrifty English walnut trees with their handsome dark green foliage and crop of nuts certainly are beautiful, and give us pleasure, profit and satisfaction and, then, too, they are something permanent and will live and maintain their beauty and productiveness almost indefinitely.

The meeting then adjourned

WEDNESDAY, NOVEMBER 17, 1915.

Meeting called to order at 10 o'clock by President Washburn.

Report of the Secretary-Treasurer was read by Mr. Minton.

The motion was made by Mr. Bateham, and seconded, that a committee of three be appointed to confer with the secretary as to the size of the yearly report and to what extent it should be published. The president appointed C. D. Minton, A. P. Bateham and H. B. Miller.

Prof. V. R. Gardner: "A Consideration of the Question of Bulk Pruning."

A CONSIDERATION OF THE QUESTION OF "BULK" PRUNING

By V. R. Gardner, Professor of Pomology, O. A. C.

Introduction.

Any one who has had occasion to make a somewhat careful survey of the literature pertaining to pruning fruit trees realizes the improbability, if not almost the impossibility, of advancing an entirely new idea on the subject. It has been discussed so often that something has been said on almost every phase of the question. Furthermore the literature on pruning shows that there is hardly any practice followed, or any theory held, about which there are not opposite views. It may almost be said that the literature of pruning is very largely a record of opinions formed, of views held, rather than a record of facts ascertained and principles established. What is needed in a difficult field like that of pruning, is first the collection of a large body of facts—facts that are presented just as they are found, uncolored by any opinions or theories regarding their explanation. Once in possession of such a large body of facts it should be possible carefully to analyze and interpret them. Perhaps it is too much to expect that we may learn all that they have to teach, but certainly there should be a few lessons that we can draw from them. Fortunately we are not entirely without data regarding certain pruning operations. The difficulty has been that in too many cases the amount available has been too small to warrant the conclusions that have been reached. Sometimes, too, a large amount of evidence has led to erroneous conclusions because considered from unfortunate points of view, or because closely related facts have not been taken into consideration. Viewpoint is often as important to a correct interpretation of evidence as is the accumulaton of additional data that bear on the question.

It is not the intention in this paper to present a large body of new data. Time is not available for a detailed presentation of all the evidence, nor is it necessary in this instance. The illustrations cited are simply representative of examples that without doubt the reader has seen duplicated in many orchards in many parts of the country. In other words, the full body of facts here called in evidence includes the observations and experiences of many fruit growers and investigators. The object of the paper is rather to suggest a point of view for a consideration of this evidence. It is not claimed that it is a new point of view, but it is one that without doubt is given too little consideration by those directing, or engaged in, pruning our orchard trees.

Pruning Considered as an Operation Affecting the Tree as a Whole

In pruning practice and in the consideration of pruning problems, outside of those dealing with the healing of wounds, most people look upon pruning as something directly affecting the tree as a whole. We speak of pruning this tree heavily and that one lightly; of heading-back one and thinning-out another; of winter-pruning in one instance, and summer-pruning in another. We say that a certain tree that has been neglected for a number of years requires a heavy pruning to bring it back to a vigorous productive condition. Such a statement is made, regardless of the fact that, while possibly **certain parts** of the tree should be pruned heavily, certain other parts should be pruned lightly, if at all. Taking it for granted that heavy pruning is synonomous with large cuts and much brush left on the ground we proceed to do rather heroic work. If a tree thus pruned fails to attain quickly the vigorous productive condition we have in mind as an ideal, we wonder why the result has not been satisfactory especially when general opinion seemed to be that heavy pruning was required. On the other hand, when it is decided that another tree requires only a light pruning, we proceed to take out only a very few branches, and consider it fortunate that so little work is required. If such a pruning is attended by some of the results usually accompanying a heavy pruning again we wonder why. These statements, which will be recognized as based upon very general experience, serve to illustrate the fact that pruning is looked upon as a kind of **bulk** problem—as something which is decided upon for the tree as a whole, done to the tree as a whole, and to which the tree as a whole responds. It is some of the negative evidence on this question with which this paper is mainly concerned.

Evidence That Pruning Does Not Directly Affect the Tree as a Whole, but Rather Parts of the Tree.

Evidence from the Results Following "Dehorning."

Every one who has had much experience in pruning fruit trees and many who have been simply casual observers, have seen trees that have been more or less severely cut back or "dehorned," as it is called when the cutting back has been very heavy. In fact, this is the kind of pruning with which some people are best acquainted. The type of growth that almost invariably follows such pruning is well known. If the dehorning has been done in winter or early spring, numerous comparatively upright shoots will be produced during the following summer. The usual practice is to thin out these shoots and head-back those that are left, the idea being to develop as quickly as possible new fruiting branches. Thus is the tree re-invigorated—"rejuvenated." So well is this procedure understood that we regard as practically settled the questions as to when and how to rejuvenate our trees. We assume that the trees **as a whole** responds to the treatment given, and there the matter rests. But does the tree **as a whole respond?** And is the whole matter to be thus summarily dismissed? Even a cursory examination of a tree that has been recently dehorned shows that only **a part** of the tree has responded. Because it happens to be the part upon which we have, through habit, come to focus our attention, makes it none the less **a part,** and **not the whole tree.** Undisturbed branches in the lower part of the dehorned tree usually continues to grow in the ordinary way. As a rule their spurs bear flowers and fruit no more regularly and yield a product of no better grade than before. Their older spurs and smaller fruiting branches are nearly as prone as ever to become gradually weaker and die. Apparently neither as whole branches nor in their separate parts have these branches in the lower part of the tree been accelerated or retarded in growth. The chances are that they have not even produced watersprouts, such as have developed so abundantly on the dehorned branches above them. In other words, there is an important portion of the tree, often its most important portion, that has apparently not been affected by the dehorning either for better or for worse. Though the tree as a whole has been pruned heavily, a large part of the tree has not felt the influence of the pruning. Dehorning has not rejuvenated the whole tree; it has resulted merely in the production of new wood to replace a portion of the old top.

Evidence from Results Following Partial "Dehorning."

Even more striking evidence on this question of the distance to which the influence of pruning extends is furnished by trees that have been partially dehorned, i. e., have had a portion of their branches cut back very severely and other branches of equal size and that reached to an equal height left untouched. In such instances, what we have come to regard as the characteristic results of dehorning usually are limited almost entirely to the branches that have been cut back. These branches give rise to watersprouts in abundance, but the unpruned branch continues to grow and function as though nothing had been done to upset the normal course of events in the tree. The case presented is that of a single branch, or several branches, immediately surrounded by the effects of a particular tvne of pruning and yet neither having received a stimulus from the pruning itself or an influence from the new vegetative growth resulting from it. So far as results are concerned, they may be compared with those following the occurrence of a frost in some region. Because of elevation or location, killing temperatures are not reached and vegetation is not injured in a particular orchard, even though neighboring orchards possessing the same kind of soil, containing the same varieties, swept by the same prevailing winds, and fallng within the same general storm areas, may have their new growth entirely destroyed. Another particular orchard receives no benefit from a rain coming at a critical time, if just before reaching the orchard the path of the storm is turned in another direction by a monetary shift in the air currents. Similarly a particular limb is apparently little benefited or injured by the pruning shears or saw that greatly injures or benefits, or even entirely removes the surrounding or neighboring limbs. All have seen examples of the point that is made here in old trees of one species or another that were being top-worked, where the top-working was being distributed over a period of several years. The heavy pruning that such trees receive, incident to the top-working process, usually is not reflected to any appreciable extent in a changed manner of growth on the part of the ungrafted limbs. On the contrary, the influence of the heavy pruning is apparently mainly limited to an area close to the point of insertion of the cions. This seems to be true not only for the first season, but for as long as the tree remains in a partially top-worked condition.

Evidence from the Type of Pruning that Entirely Removes a Few Large Limbs.

If there is a type of pruning that lies at the opposite extreme from the cutting-back to stubs of a number of large limbs for purposes of grafting and at the same time leaving one or more large limbs uninjured to help temporarily to maintain a balance between top and root, it probably consists in the entire removal of one or more comparatively large limbs, the majority of the limbs being left unpruned. This may be considered a kind of **bulk thinning.** In a way it is the converse of the bulk heading-back practiced in dehorning. Few will fail to recognize it as a type of pruning commonly employed by many fruit growers. It at least possesses the advantage of requiring little labor. At first thought one might imagine that if bulk heading-back influences only certain parts of the tree and not the tree as a whole, certainly bulk thinning-out should operate in an opposite manner. However, let us see whether or not it does. When a single large limb is removed from almost any part of a tree, watersprouts develop to take its place, and the rest of the tree top continued to grow much as though no pruning had been given. Attention is again called to the point of origin of these watersprouts. They spring, in the main, not from limbs far removed from the pruning wound, but close to where the cut was made. There is an unmistakable response to the bulk thinning, but that response is evident within a very limited area. The tree as a whole does not show it.

Those who have intentionally or unintentionally permitted a leader to develop for a number of years and form close-centered trees and have then tried to train them as open-centered or vase-shaped trees can furnish abundant evidence on the question under discussion. The removal of the central leader from trees of this kind (bulk heading-back or bulk thinning-out, depending upon the form of the tree and where the cut is made), is almost always followed by the production of a number of watersprouts that attempt to take its place. The subsequent removal of these watersprouts is followed by the production of still other watersprouts, nearly always springing from points near the wound left by the removal of the leader. On the other hand the unpruned branches of the tree seem to be little influenced by the cutting out of the leader.

What has just been said regarding the bulk pruning of old trees apparently holds true for younger trees, though perhaps to not quite the same degree. When trees that have not yet reached bearing age, or that are just coming into bearing, have one of their larger limbs entirely removed in order to train them to a desired shape, new shoots usually start to take the places of the limbs that have been cut out. Those who have had any considerable experience in attempting to develop open-centered Yellow Newtown apples or Bartlett or Anjou pears, or close-centered McIntosh apples or Winter Nelis pears, know how difficult it is to keep shoots and limbs from growing up in the center in the first instance and from spreading out and even growing down in the second by simply cutting them out or off; and what is of equal or greater importance, make the other shoots and limbs of these same trees spread out or grow upright, as the case may be, and thus profit by the food materials that it is desired to divert from the closely pruned parts. In fact, so persistent are the watersprouts in attempting to replace removed limps, that many careful growers are coming to realize that the easiest way to develop an open centered tree is not to cut out all of the growth in the center, but rather to simply suppress it by pruning it a little more severely than the surrounding branches that are desired to form the main framework of the tree. Even then it is to be doubted if the normal growth of the remaining branches is materially changed. Similarly, when young trees are lightly, or even heavily headed-back, new shoots are sent out, but mainly from points where some of them can easily replace the portion removed. It is not usual for distant portions of the tree to show a clear cut response to the pruning.

It may be argued that when the thinning-out and heading-back that are usually afforded very young trees is practiced, the tree as a whole responds to the treatment—sometimes nearly every bud starting to vegetate. Without doubt such trees are influenced as a whole by the pruning given them, but it must be remembered that every part of such trees is pruned; and that probably the tree is influenced **as a whole** only because **each part** is separately and distinctly influenced.

Evidence from Spur Pruning.

Also bearing on this same question are the results that are obtained from what might be termed "spur pruning." As they become older, some varieties of apple and pear trees are very prone to develop large numbers of fruit spurs, spurs that often branch and rebranch until they become fruit spur clusters rather than individual spurs. If more or less neglected, such trees finally reach the state where they make hardly any new shoot growth, practically their entire energies being absorbed by their fruit spur systems. Usually when there are such large numbers of fruit spurs, but a comparatively small percentage can flower and fruit in any single season and the record of any single spur, or even spur cluster, especially in an older part of the tree, would show very irregular fruiting. Such trees present a condition in which, though there is little of what we commonly speak of as vegetative growth, nearly all of the energies of the tree are really being absorbed in a slow vegetative growth of the spurs. The engineer would say that the fruiting machine is so large and complicated that nearly all the power is required to overcome friction; consequently but a small portion of a full load can be carried. The economist would say that it is an instance of the trees using up most of their income in their own overhead charges. Such of course is recognized as the condition that many seek to remedy by dehorning or by some other type of bulk pruning. That bulk pruning is only a partial remedy has already been pointed out. Some have seen the experiment tried of removing a part of the spurs from such trees—a half, or two-thirds, or even three-fourths of them. As the spurs possess a very large percentage of the normal growing points and bear practically all the leaf system of a tree in such a condition, it will readily be seen that such a thinning of spurs is really the equivalent of a heavy pruning, except perhaps in the total weight of wood tissue removed. Treated in this way trees do not produce watersprouts as they do when dehorning or the removal of a few large branches takes away an equivalent number of growing points. In fact, they produce very few watersprouts. However, the remaining spurs show a much more vigorous growth and the new shoot growth that develops from normal lateral and terminal buds is much larger and more vigorous. The net result is that the tree is changed little, if at all, in general form; but the rate of growth of nearly all of its individual parts is accelerated, and the ways in which they function are materially changed, for strengthened and enlarged spurs bear fruit more regularly. Here then is a type of pruning that has apparently affected the **tree as a whole,** affected the tree as a whole because affecting **nearly all** of its individual parts. However, it is a type of pruning that must be regarded as the opposite of **bulk pruning.** Of course it is an extreme case, but nevertheless it serves to illustrate the point that it is desired to emphasize.

The Interpretation of the facts Presented.

A consideration of the facts that have been cited leads unmistakably to at least one conclusion, viz., that the radius of influence within the tree of any pruning (i. e., the cutting out or cutting back of any particular shoot or branch) is comparatively narrow. Parts close to the pruning wound, or perhaps close to space left by the removal of a branch, show a response to the pruning treatment. Roughly speaking, other parts of the tree do not. In other words, pruning does not **directly** affect the tree **as a whole,** but it affects it only indirectly through its effect upon individual parts. Why such is the case is, of course, another question. No attempt is made to suggest an answer here. Probably much careful work will have to be done before a satisfactory answer will be forthcoming. Meanwhile the principle established may be of use, even though we are not able fully to explain it.

Application of the Principle Established to Pruning Practice.

In order that a few of the applications of the principle that has just been stated to pruning practice may be better understood it may be well to make a brief statement regarding some of the main objects that the grower should have in mind when pruning. In other words, why do we prune? There are of course many ends sought in pruning, the relative importance of which vary with soil, elevation, temperature, humidity, disease, variety and many other factors, factors both environmental and those artificially imposed by market demands or the whims of the grower. It is not the intention to attempt even to mention these here. It will be generally agreed, however, that, primarily, pruning must seek to bring trees into bearing at a reasonably early age and then keep them bearing large quantities of high grade fruit, and that must be done with due regard for keeping down the cost of production. Limiting the discussion now to apples and pears, it may be stated that at least in the case of older trees by far the most of the fruit is borne upon fruit spurs. Pruning should consequently aim to lead to the production of large numbers of fruit spurs and to the regular bearing of those already possessed by the tree, together with the maintenance of a reasonable amount of vegetative growth. It has just been pointed out that bulk pruning is mainly influential in the stimulation of watersprouts and not the main fruit spur system or **normal vegetative growth** of the tree. There is certainly very little reason to believe that watersprouts can, or at least do, take the place of the normal vegetative (shoot) growth in contributing to the welfare of nearby fruit spurs and to the welfare of the trees as a whole Furthermore, they are comparatively slow in developing a fruit spur system of their own; so it may be questioned whether or not they are really very useful in the economy of the average tree (except of course for special purposes, such as rebuilding a new top in cases of renovation, etc.). To stimulate the formation of fruit spurs and to increase the efficiency of those already in our possession requires that pruning must be afforded close to the point where we wish them formed or where they already are, for we have seen that the radius of the influence of pruning is comparatively narrow. This in turn means light, or rather fine as opposed to coarse, pruning. In other words, it means pruning that is distributed throughout the tree top, for the spurs and normal vegetative shoots are thus distributed. Our tendency must be in the direction of the removal or cutting back of a large number of smaller branches. It will be necessary more and more to get away from the idea of what has been called **bulk** pruning and to give greater attention to detail. Theoretically pruning should concern itself mainly with shoots and spurs rather than with older or larger wood. Practically it should be limited to the shoots, spurs and smaller branches. Of course in the case of trees that have been neglected for several years some exceptions must be made. Just because the removal of a larger number of smaller branches necessitates the exercise of better judgment and perhaps takes a little more time and requires greater skill than the removal of a smaller number of larger ones, this should not deter us from the best method of procedure.

Carrying the line of reasoning a step further it becomes evident that pruning should be a regular, rather than an irregular orchard operation. This is a statement that most growers know to be true from observation and experience, though the reasons therefor may not have been clearly understood. However, the points that have been brought out furnish an explanation of some of the characteristic results following irregular pruning. Trees left unpruned for several years usually seem to demand the removal of some of the larger branches or limbs. This approaches the bulk type of pruning that has been described, and as such stimulates new vegetative growth, rather than invigorating the older fruiting wood; and new vegetative growth in trees of this sort is as apt to increase as to diminish difficulties. If the pruning that is to be afforded our orchard trees is to be such as will help establish and maintain rather than disturb a proper balance between vegetative and fruiting wood it must be attended to every year.

What has been stated should not be regarded as an argument against occasional heavy pruning, i. e., the removal of a considerable amount of growth. Though heavy pruning as commonly done is bulk pruning, this is not necessarily the case. It may consist in the removal of a large amount of shoot growth and small branches and thus not give rise to watersprouts, but on the contrary stimulate the normal vegetative growth and fruit spur system of the tree. The instance of spur pruning cited in this article is evidence on this point.

Some Questions Raised by the Facts Presented.

That the radius of influence of a particular pruning cut is comparatively narrow seems to be established beyond all question. Just how far that influence extends is only one of a great many unanswered questions. Is the radius of influence of a pruning cut the same when a limb is cut back as it is when it is cut off entirely? Does it depend more upon the size of the wound or the age of the limb? Is it felt to as great degree by fruiting wood in the neighborhood of a cut as by more strictly vegetative tissues? Does it depend to any extent upon the season when the pruning is done? For instance, is the radius of influence from a cut made July 1st greater or less than it would be from a similar cut made March 1st? To what extent are the fruit spurs of a tree virtually independent of the tree as a whole, and to what extent are the fruit spur and vegetative systems interdependent? If interdependent to a certain degree, how close to a particular shoot must a particular spur be in order to be benefited or injured by it? Is the radius of influence of a particular pruning cut greater or less than that of the part removed? Finally, to what extent are parts of tree tops independent and to what extent are they interdependent? These and other questions are at present unanswered. They are not easy problems to solve, yet they must be solved if we are to have a more perfect understanding of the principles underlying pruning practice.

V. R. GARDNER.

Regarding Professor Gardner's address, the question arose as to whether bulk pruning applied to prune trees as well as to other fruit trees. Professor Gardner replied that it did, and that the results of bulk pruning were practically the same on all deciduous fruit trees.

S. V. Beckwith: "Centralization of Packing." Mr. Beckwith not being present, his address was read by President Washburn.

CENTRALIZATION OF PACKING.

By S. V. Beckwith, General Manager,

Rogue River Fruit and Produce Association, Medford, Oregon

My subject covers two features that are vital to the success of deciduous fruit growing in the Pacific Northwest. First, the physical handling of the fruit; second, standardization of pack. To successfully grow good fruit, to cultivate, to prune, to combat scale, codling moth, blight, scab, Baldwin Spot, watercore, and the other diseases that deciduous fruit is heir to; to produce good crops of good fruit every year—these are problems which call, in my opinion, for a high degree of intelligence and eternal vigilance. On the other hand, to successfully distribute and market the fruit when grown and produce good prices, year after year, is another equally important and equally difficult problem demanding the best energies of the highest trained men in that specialty. But the production of good fruit and the intelligent marketing of it will not avail if the assembling and packing of the fruit is poorly done, resulting in an unattractive package and physical damage to the fruit itself

The Rogue River Fruit and Produce Association has just completed its sixth consecutive season as a co-operative deciduous fruit growers association. In that period it has acquired no less than five different packing and warehouses at five widely separated points in the Rogue River district, each packing house being located upon the railroad and having its own sidetrack. The most recent of these houses was acquired no less than three years ago. In the early history of our organization we packed the growers' fruit at each one of these five warehouses, having crews working in all of them at the same time, and in addition to this perhaps fifteen or twenty of the larger growers ran their own packing houses at which their own fruit was packed under our supervision. This imposed upon the management a nearly impossible task—that of supervising and inspecting all of these packs so thoroughly and so successfully as to insure standardization and careful handling at all times. We did our best, but were distinctly not satisfied with the results. Another bad feature of this method was apparent in the handling of the early pears, such as Bartletts and Howells. We found it physically impossible to clean up each one of the packing houses every night, and to pack out during the day every pear, whether first, second, or third grade, that had been brought in the day before. Then again, even the packed Bartletts would of necessity lie around occasionally for twenty-four hours or longer before being loaded into an iced car. There might be, for instance, only a halfcar packed and ready to roll, which would have to wait until the next day without refrigeration, for enough fruit to complete the car. I do not mean to say that this was a frequent occurrence, but in spite of our best efforts it would happen once or twice a season.

In the spring of 1913 we built in Medford a cold storage warehouse with a capacity of approximately forty cars of real refrigeration and sixty cars of dry tonnage. In 1914 we began to realize the possibilities of the auto truck as an assembler of fruit. We tried this out in a small way during that season, hauling some pears and a considerable quantity of Newtown apples loose in packing boxes to our cold storage plant in Medford. The experiment was so successful that we laid our plans in the winter of 1914-15 for complete centralization of packing at our cold storage plant. We transformed our second story, by inserting plenty of windows, into an ideal packing room, where we could, if need be, operate a crew of 100 packers. We built a conveyor at one end of our building, by the use of which one man could unload the fruit from the truck, and it would be carried to the second story, there to be received by roustabouts and distributed for packing.

Not being financially able to purchase our own trucks, we made early negotiations with all of the available trucks in our district, and arranged with them to haul the growers' fruit upon a regular tariff, based on the length of haul and condition of roads. We concentrated at our cold storage plant all packing supplies, gathering them in from our outlying houses. We offered to pack for the grower, furnishing all labor and materials for the sum of twenty-five cents per box for pears and twenty-eight and one-half cents per box for apples, plus whatever the auto haul might be. We have permitted some growers with short hauls over exceptionally good roads to haul their own fruit, but wherever the haul was long or the road rough, we have insisted upon the use of the auto truck. Our largest truck has a capacity, of two hundred fifty packing boxes of loose fruit. We have hauled crops of both apples and pears, a distance in some instances of fourteen miles. The bruising to the fruit has been negligible. In fact, it is our experience that a good auto truck loaded to capacty rides as easily as a five-thousand-dollar touring car. Our operations began the first week in August with Bartlett pears and have been kept up continuously until the 13th of November when our packing was completed. The hauling of the Bartlett and Howell pears which are picked in extremely hot weather, was all done at night. The grower would advise us at the end of his picking day what he had to be called for. This he piled at some convenient place in his orchard where the auto truck was able to go. At any time between 10 o'clock in the evening and 3 o'clock in the morning the truck called for this fruit, and it was delivered at our central house during the cool hours of the night, received thereby a night crew whose duty it was to segregate it according to growers' names, check up carefully the number of boxes received, place in each box a card bearing the name of the grower, and stack it in front of the packing tables for the next day's operations. The packing crew came on at 8 o'clock and in every instance cleaned up all of the fruit set befor them for that day. As soon as the fruit was packed it was labeled and sent downstairs by gravity, either into an iced car, or, if necessary, into our cool rooms, where it would be held twenty-four or forty-eight hours, or two weeks if advisable, under ideal conditions. With later varieties of pears and apples the necessity for night hauling was removed, although we continued to haul at night as much as possible because of the convenience of so doing. Thus we have had one crew varying in size according to the amount of fruit to be packed, in constant operation since the first week in August. There has been one head packer over this crew, whose constant and only duty has been to supervise and inspect the pack. The growers have not purchased from us a single box or a single sheet of paper, and we know where every particle of material has gone, and exactly what, if any, our waste has been. Perhaps, fortunately for us, the crop of our district has this year been a light one and we have been permitted to work out this experiment under conditions which did not result in tremendous crowding. We have made mistakes, but no vital ones. We have gained the experience of a full season's work, and can most certainly correct these mistakes another season and improve in many minor details upon the general method. The improvement in the physical handling of the fruit, both from the standpoint of bruising and of keeping the fruit in proper temperatures, and the improvement in our grading and general standardization of pack and mechanical excellence of it has been very marked. One large foreign buyer, after careful inspection of our methods and our packed fruit, characterized the pack as the best he had seen.

We are peculiarly fortunate in our district in having on the whole very good roads and comparatively easy hauls. Our association is also peculiarly fortunate in having cold storage facilities which are available immediately after the fruit is packed.

The possibilities of this symtem seem to me very far reaching. Our district, and I believe, every district in the Northwest, must come sooner or later to a co-operative use of our waste material. With all of our culls or otherwise unpackable fruit collected in one place, the day is not far distant when we may be able to install as an adjunct to our packing and cold storage plant an up-to-date cannery and apple juice factory. This will do away with the great problem of what to do with our culls, and while we all hope for the time when the percentage of culls shall be reduced to a negligible quantity. we all know full well that there never will be a year when a large fresh fruit packing plant such as ours is bound to be, will not have an abundance of waste material that can be advantageously turned into some by-product.

In conclusion let me say, that centralization of packing has in my opinion come to stay; that it will do more especially in connection with cold storage facilities, toward the proper handling of our fruit and the proper standardization of our pack and improved deliveries in all the markets of the world, than any single plan or idea that has ever been tried out by the deciduous fruit growers of the Northwest.

The question was asked President Washburn as to what was done with cull fruits in the Rogue River Valley.

Answer: In the Rogue River Valley last year our culls were sold locally and some of them were shipped east of the mountains to neighboring cities. A great many were shipped to a cannery. This cannery last year started making canned apple juice, which was very satisfactory and which has proved a very popular beverage. Some of the culls were used by the cannery in making apple butter and canned apples.

The matter of culls is going to be a very serious one to the grower of any size. The matter of reduction in the cost of fruit has been taken up in the hopes that it might result in better returns to the fruit grower, and if the cost is to be reduced, the matter of culls is an important phase to be considered.

The members present were unanimous in their feeling that the fruit growers of the Northwest are not, and have not been getting fair returns for their fruit, one reason being that there are too many sharing the profits, and when the railroads and others along the line have taken out their share, the amount left for the fruit grower is not worth mentioning. The commission man is being dispensed with to a certain extent. There are those who say the commission man has served a great purpose. So has the horse car, but there are some things and some individuals who outlive their usefulness, and in the evolution of the distribution of products of all kinds in this country, the commission man is going to play a less important part each year. What we want is a fair return, through a series of years, for our fruit. The question of getting the produce to the consumer with a fair profit to the producer is one of vital importance, and this problem is already being taken up by the Government.

THE GROWER AS A SALESMAN.

(Address by A. H. Harris, industrial writer on the Evening Telegram, before the Oregon State Horticultural Society, at Corvallis, Nov. 16-18, 1915.)

GUIDE POSTS TO SUCCESS IN SELLING.

Kill out consignment abuse. Sell direct for cash and cash only.

Give speculators a chance to speculate on their own money while growers accumulate theirs.

Organize a state-wide selling department to gather information on world crop conditions, on acreage, market fields, crooked dealers, competitive districts, and all other elements which enter into selling at wholesale.

Make this central office the selling headquarters for the state, and continue the local offices in each district as shipping and storage agencies, only. Keep books in each local office.

Employ one high-class salesman to sell the fruit crop of the state, and employ bookkeepers and warehousemen at local offices to keep the accounts and store and forward the fruit.

Pool fruit for selling only. Do not allow a pool to be delivered anywhere before you get your money. Apples in a warehouse under proper supervision should be delivered like wheat is delivered.

Advertise the apple. Use the newspapers, sales days, box displays. Banish the grocer who sells apples by the dozen.

Stop the selling of culls on any market. Offering culls kills the sale of much good fruit.

Overcome competition by developing distinct lines of goods, fresh, evaporated and tinned, each with its attractive values and each appealing to the people in certain fields.

Markets in Oregon are being neglected. Hotels and restaurants are not using apples and other Oregon grown fruits freely enough, while cheap bananas and oranges in Portland make the field need cultivating.

Each fruit growing district should specialize strongly. Develop large output of certain fruit, or varieties, and do not try to grow everything. Quantity counts for as much as quality in selling at wholesale.

The lack of continuity in selling methods is one of the weaknesses of the fruit game in Oregon.

Publish a valuable booklet on the apple, its culture, its food value, its varied uses, and place a copy in each box packed in the state. People know little about the apple and growers must disseminate information which will increase consumption.

Do not worry about the brand on the box. People do not buy the box, but its contents. Apple boxes should be clearly marked as to acid content, keeping or eating or cooking qualities, as well as to size and color of the apples. Few housewives know all about the apple.

The producer has been milked long enough, in Oregon. High land values, heavy interest charges and high taxes demand all that an orchardist can make as fast as he can make it. Let readjustment come, especially in marketing methods.

Distribution is the handmaiden of production. Selling is an essential part of the annual output of every orchard. Profits cannot come from production alone, even though cost of production be at the very minimum.

A co-operative selling scheme which does not properly care for the small producer is a failure, unless centralization in orchard products is the end to be gained.

The shipper who does spasmodic business, whether in wheat or whetstones, must fail in the face of modern competition.

Men are ever ready to grasp personal advantage at the expense of community prosperity. Selfishness and nearsightedness usually go together.

Unregulated forwarding of fruit must certainly produce congested markets and low prices. The proper handling of fruit at the point of production is as much a matter of good salesmanship as the actual selling at the place of consumption.

Whether fruits should be sold as fresh, tinned, evaporated or in glass is a matter of quantity, quality, markets, transportation, judgment and experience, not an experiment in developing by-products.

The commercial value of any commodity is regulated by four factors: quantity, quality, constant suppply, and delivery.

Finally, if co-operative selling is to be successful, there must be co-operation among producers—all producers of fruit.

The producer, whether the product be wheat, wool, apples or peanuts, has been and likely will continue to be the helpless victim of abuses in distribution. As methods of production become more scientific, as the quality and quantity of crops increase, new abuses and even extortion in marketing appear, for the grower frequently mistakes volume of output for profits and prosperity. And, there have been enough human parrots in every neighborhood to keep up the senseless prattle about increased production being the best evidence of greatness in the producer and riches in the community.

The wheat grower of the Middle States has passed through all the stages of production and nearly all the evolutions of distribution. In it all he has been wiser than the Oregon apple grower, for he always demanded the cash for his products when he sold them, not when they were delivered and marketed at a distant point of consumption. The wool grower has always received his money when he sold his wool; the stockman gets his check when his cattle or sheep are delivered to the buyer, not when the packing house of central market place is reached.

It has remained for the fruit grower to maintain the consignment abuse long after other wise producers on the land have killed off the consignment shark. It has become part of the fruit game in the Northwest to brag about great market places and stand off the banker who loaned money to cover marketing expenses. With the most perishable goods produced, the fruit grower consents to the delivery of his produce in a faraway city, among strangers whose one purpose is to make money through the handling of the consigned commodities.

Grower Suffers From Own Errors.

And, the fruit producer must blame himself for many of the abuses from which he suffers. He brags about great crops in prospect, helping to bear his own market. He refuses to contribute liberally to projects which mean ample dry storage and cold storage as a means of controlling the movement of fruit to congested markets. He employs men to sell the fruit, and usually men who by training and environment cannot render the high class service demanded. He demands that all his fruit be sold, when he would be money ahead to market only good fruit and allow culls and inferior grades to go to the cider mill or to rot in the orchard. He sometimes pays fancy salaries to his employees and then ties their hands by lack of equipment and funds and by rules and regulations until they cannot perform the highest and best service. And, finally, the small grower must have ready money, and hence forces his crop on the market when demoralizing conditions are being crystallized by other men who do foolish things like himself.

In Oregon a great many fruit growers expect the managers of their organizations to work—literally work. If a manager is active in juggling boxes, in forwarding shipments, in keeping the stage in the office properly set for the reception of the man who produces the fruit, that manager holds the job. If a manager hires a $2-a-day man to juggle boxes and load cars and gives his time to finding markets, studying demands, and really selling fruit, he too often is asked to vacate and allow another to reduce expenses.

Salesmanship is a plant of slow growth at best. Growers do not seem to realize the need of real salesmanship in the handling of the most perishable crop that seeks quick markets.

Meet Competition Intelligently.

The Oregon grower as a salesman must recognize the fact that competition in marketing always will exist, and lively competition, too, most of the time. The theory which some growers emphasize that Oregon apples and Oregon pears have no competition in color and size gets nowhere when it is considered that apples are not consumed for either their size or color, but for their food value or chemical content. Housewives want apples for certain purposes, and they should be taught to select the best varieties of Oregon apples for each purpose. It is safe to assume that competing stock always will be offered, and perhaps at lower prices than the Oregon grower can afford to accept.

Here is where salesmanship should come to the aid of the producer. It is not enough to grow a beautiful apple and then throw it on the market to be bought blindly by women who have little money to spend. It should be sold and bought intelligently so that the consumer will buy more freely and that better results from the use of apples will certainly follow.

The fruit business is not a once-over proposition. The lack of continuity in selling plans is one of the weaknesses of the fruit game in Oregon. Prosperity cannot come until the plan be changed.

Co-operative Selling.

If co-operative selling is to be permanent and profitable among Oregon horticulturists, a comprehensive plan must be adopted, in my opinion. Overhead expense is too heavy in many cases, under methods now employed, and results are not satisfactory to the growers. On the whole, net prices received year after year, are low, except in cases where large growers make the most of fancy packs and market conditions. The small grower sells direct, too often, in order to get quick money and to avoid settlements with commission houses which have made fortunes through questionable methods. Then, co-operative selling is best for the large grower, while the small producer more or less demoralizes the market for the entire output. A co-operative scheme which does not properly care for the small producer is a failure, unless the plan is working to centralize the control of orchard products.

Take a look at the state from the angle of horticultural development and co-operative selling.

Hood River heads the list of producing districts, and a manager and sales manager are employed to handle the agency. Growers have shipping and storage facilities of their own. Outside buyers also occupy the field. At Medford two producers' organizations are being maintained, with heavy overhead costs. Salem has a very strong organization among growers, and yet prune producers maintain their own packing and selling agency. Eugene shows signs of business sanity by maintaining a single efficient organization with adequate equipment to properly pack, ship, can and evaporate the growers' produce. Milton and Freewater maintain a co-operative organization and two private shipping enterprises. Ontario, LaGrande, Hermiston, The Dalles, Corvallis, Albany, Mosier, Grants Pass, Sutherlin, Roseburg, each has a struggling growers' organization trying to serve producers who have not wisely specialized in the production of the most marketable commodities. And each carries a heavy overhead, while directly competing in the same markets with other co-operative organizations. Not one of these selling agencies is strong enough to be highly efficient, for not one has been rich enough nor wise enough to gather, year after year, the information necessary to the certain profitable marketing of the goods entrusted to it.

Where is the difficulty? I answer, in the lack of vision, in the lack of co-operation, in the lack of capital, in the playing of petty politics, in tthe working out of personal ambitions. Men are always ready to grasp personal advantage at the expense of community prosperity. The fruit grower is no exception to the rule.

Fixed Costs Too High.

Fixed costs, which must be charged against Oregon orchard land and hence against the annual fruit crop, are too high. The exploitation of land values has created a condition of near-disaster for the grower to overcome. The high price of land brought with it heavy mortgage indebtedness and high rates of interest and taxes, all of which must be borne by the fruit produced. And the real investment of money and labor by the grower should be taken account of, too. The expense of boxes, paper, packing, hauling, storage—and refrigeration where available—add greatly to the cost of stock ready for final sale and consumption. Readjustment of land prices and improved methods of picking and packing should relieve the grower of part of his crushing burden.

In addition to the high fixed cost of production the Oregon grower has the handicap of freight charges to overcome when he ships to Eastern markets. With a charge of 50 cents a box as freight on his apples, the Oregon orchardist comes in competition with the grower of New York and Virginia, where old orchards have been "brought back" and where cost of production is low. In Virginia, Col. M. V. Stedman, one of the largest apple growers in the country, says that his cost is $1.00 per barrel. Of this sum Col. Stedman says 30 cents goes for cultivation, 10 cents for spraying, 10 cents for picking and packing, 45 cents for barrel, and 5 cents for hauling. In New York and in Michigan similar figures have been given out by large growers.

System of Cost Finding.

The first element in distribution is cost of production. No sane and reliable system of distribution can be maintained unless the cost of goods is known and taken into account. Among apple growers in Oregon reliable cost figures are rare and many growers maintain that it is impossible to ascertain the cost of a box of apples one year after another, on account of crop changes and new elements entering into orchard care. Unless cost of production is known who shall say what shall constitute a fair price for box apples, and who shall know whether the industry is paying its way?

Possible Market Fields.

In the United States there are 11 cities of 500,000 population or more; 55 cities of 100,000 population or more; 110 cities of 50,000 population or more; 1,300 cities of 5,000 population or more.

A study of conditions in the country shows certain sections in which apples are not grown in commercial quantites, and other sections where the production is far short of the consumption. In great industrial centers, where market should be found for large quantities of apples, the Oregon box apple has not been marketed, largely on account of the high prices demanded by dealers. In the wealthier sections Oregon apples find market, but the expense of handling is great, and when the year's business is wound up the profits to the grower are nominal.

Eliminating the industrial centers and the wealthier sections from the field for Oregon apples, there appears the great central and southern sections of the country, where the production of apples is less than the demand or where other fruits are specialized in. In this field—from the Dakotas to Texas—the Oregon apple, in the days to come, when production must be near the maximum, should find rich marketing territory. A survey of the apple prpoduction and prospective production of the United States should be made by Oregon growers, that reliable information might be gathered and compiled for use.

Orchard Facts Lacking.

I have made a diligent effort to gather facts as to the acreage of orchards and fruit tracts in Oregon, but the best information available is a guess. In few counties of the state, only, can the area of cultivated land be gotten from assessment rolls, while the rule is to assess land as "tillable"—whatever the term means—and "non-tillable" and "timber lands." No attempt has been made, ordinarily, by assessors to gather facts as to the acreage of apples, pears, peaches, prunes, or any other fruit. All the estimates made in the Oregon Almanac and in boosting literature seem to be based on assumption, and assumption which serves the end sought. Growers should at once gather accurate information on acreage and condition of orchards and preserve the facts for the exclusive use of co-operative selling agencies.

Local Markets Neglected.

While visiting scores of towns in Oregon I was struck by the absence of apples on the markets and by the miserable packs and displays where apples were offered for sale. The neglect of local markets seems to be complete, outside of Portland, where a few stores maintain admirable displays of fresh fruits and exercise salesmanship in their disposal. In many towns only inferior fruit was on sale and frequently it was "shopworn" and even disgusting. Oregon, as a field for the sale of Oregon fruit, is being neglected, while returns from Eastern markets are discouraging if not disastrous in many cases.

Apples Not Popular Food.

In Oregon, outside of Portland there are approximately 1,700 hotels and restaurants, where meals are served the public. In Portland there are approximately 700 hotels, grills, restaurants and dining rooms. I have visited more than 100 eating places in Oregon recently, and only in a few was I able to get service of apples or other Oregon fruit from the ordinary menu card. On the bills of grills and restaurants oranges and bananas and tinned pineapples are featured, and during season the Oregon strawberry, but there is no effort to encourage the consumption of the Oregon apple or the Oregon pear. Even at Hood River and at Medford the restaurant and grill service does not include apples, except, perhaps, occasionally as baked and frequently as pie in competition with a dozen other standard varieties of pie.

I doubt, seriously, if Oregon orchards now produce more fruit than could be consumed within the state, with due consideration for the health of the people and the loyal patronage of Oregon industries.

Exploitation Always Bad.

It is agreed, generally, I think, that exploitation of land values in Oregon has worked great hardships on the legitimate producer as well as on the individual victim of the scheme. Exploitation is always bad; for the methods used damn those who take even as they crush those who lose.

Oregon growers cannot afford to exploit buyer or consumer by the selling of inferior fruit, even if ample opportunity were offered. What is needed is steady markets, year after year, at fair prices, prices at which consumers can afford to buy and merchants can afford to handle the Oregon product in open competition with the product of any other section of the country, if need be. On this basis a permanent and profitable industry can be developed.

Oregon has not begun to produce apples and pears. It may be expedient to consider only the bearing orchards in planning for markets, but the wise and far-sighted man would certainly plan for markets five and ten years hence, when the production of the state should be quadrupled and tthe profits of the grower greatly multiplied.

Oregon should be a great permanent field for apple buyers, with the same men buying and selling, year after year. In this way confidence would be established and widely varying market conditions would disappear.

Customers Must Be Protected.

The average fruit grower does not fully realize that when he becomes a salesman he must protect his customers in their several fields and make good on supply and quality of goods needed by each customer. The shipper who does spasmodic business, whether in wheat or whetstone, must fail in the face of modern competition.

Men who are supplying large quantities of fruit for consumption should be able to get supplies from the same concern, under the same rules and regulations, season after season. And, as much of the success in business depends on personality and acquaintance, change in management should not be frequent. In Oregon selling agencies have trained too many men. Efficient enterprises are seldom new enterprises; efficient men are those who have had adequate training and not a little experience.

Buyer Is Court of Last Resort.

As a salesman of his own goods, the grower of fruit must consider the whims and fancies of the retail buyer, for the consumer is the court of last resort. The buyer may know less about the production of apples than she knows about the Angel Gabriel, but she knows something of food values and a lot about the value of the dollar. She knows a great deal about raisins, oranges, bananas and pineapples, because they represent the aristocracy in fruit distribution, but she knows little about the plebeian apple because it always came from the family tree and represented no real money value.

Supply and Delivery.

Oregon growers must realize that the commercial value of any commodity is regulated by four things—quantity, quality, constant supply and delivery. The best quality can be cheapened by either lack of constant supply or faulty delivery. Substitutes are more frequently accepted by buyers on account of lack of constant supply than from any other cause.

If merchants must keep supplies awaiting the call of the consumer, so must the apple grower—or the speculator in his stead—keep stocks of fruit awaiting the call of the merchant, if high prices and good markets are to be expected. Forcing all the fruit on the market during the fall and early winter will always have the effect of bearing prices and preventing profits.

The Credit Abuse.

I have not been able to understand why the fruit grower should be expected to pay high salaries to men to contract credit accounts and then fail in the collection of so many. There is, in my opinion, no good reason why the grower should consider credits at all. Let the speculator or the merchant take care of the credit end, using his own money to do so, not the goods nor the money of the grower, who must pay interest on his debts, and finally must pay his debts in full.

What is wrong with the methods of distributing wheat? The grower sells his grain and gets cash for it; the speculator or the exporter sells the grain and gets cash for it; the miller sells the flour and gets cash for it; the merchant pays cash for flour and does as he pleases about credits to the consumer. In this case the man nearest the credit risk takes care of the business; in the fruit grower's problem the man farthest from the credit risk must assume all responsibility for the success of the venture as well as for the honesty of the men who handle the money. Of all commercial abuses the consignment of fruit in faraway markets is the most unwise and needless.

Storage Facilities Needed.

Fruit growers in Oregon must remain at the mercy of speculators and cold storage concerns until adequate storage facilities shall be provided at points of production. Except at Hood River and Medford dry storage facilities are lacking and adequate cold storage has not been provided.

So long as the grower must force his fruit on the market as soon as he has it packed, he must sell at his own disadvantage. Speculators who supply storage will take the profit from the service and more with it. If growers supply the storage facilities they will be enabled to hold their crops for improved market conditions, and better prices.

The proper handling of fruit at the point of production is as much a matter of good salesmanship as the actual selling at the point of consumption. Unregulated shipping must certainly produce congested markets and low prices.

Orcharding Rich Man's Game.

Every indication, as I see it, tends to confirm my opinion, that orcharding in Oregon must become the rich man's game. As in every other line of activity, opportunity for the man of small means is limited, and his expense of operation must be out of proportion to the expense of handling the large tract. Only community packing and hauling can postpone the day when small tracts—5 and 10 acres—must be merged into the large orchard, and the small owner must become the worker in the orchard of the corporation or the well-to-do citizen.

Small Canneries Not Successful.

The day of the small cannery, whether co-operatively or privately owned, has gone by. The successful cannery of the future must have a wide field, good transportation facilities and large output. Quality and quantity must go together in the product of canneries in Oregon if the growers of fruit used are to be fairly compensated for their products.

Much of the canned goods sold at retail bears the guarantee of the grocer as well as the warrant of the canner, and frequently the label of the jobber replaces the brand of the canner. No jobber desires to buy small quantities of canned goods and only high-grade packs can be sold to advantage. The small cannery, poorly equipped, cannot meet the demands of modern business, hence it cannot meet the competition of great enterprises wisely located in production centers and skillfully operated.

By-products Idea Overworked.

Oregon growers have heard much about the profits which should or would come through a proper system for the utilization of by-products of the orchard. Like every other panacea for financial ills the by-product scheme fails to take into account the fact that fruits are of good or bad quality and that the bad stuff should be thrown away.

There is very little chance to utilize waste fruit, even in cannery production, and no effort should be made to salvage the inferior stuff until the quality product is sold and sold at good prices. Producers frequently spoil the market for good grades by forcing a lot of inferior stuff on people who are willing to save a little money at the time and who afterwards refuse to buy the better grade stuff at higher price. This must be poor salesmanship. There is a demand for cider and for vinegar which must be met. There should be a demand for jellies, jams, butters and preserves, but if these by-products are to find constant markets at fair prices the fruits used must not be of inferior grades.

Whether fruit should be sold as fresh, canned, dried, in fluid form or in glass is a matter of quantity, quality, judgment, information and experience, not an experiment in developing by-products.

Strong Publicity Lacking.

Oregon fruit growers either do not know how to give publicity or they do not do the best they know how to do. I made a study of Portland dailies to ascertain how much publicity is being given all varieties of farm produce.

During the last 30 days—the real opening of the apple season—little mention has been made in any Portland daily except in market quotations and in the advertisements of Ben Bellamy, grocer. And in market quotations Washington apples get mention as freely as do the Oregon product. In large display advertisements of provision houses and department stores space is given freely to meats, butter, poultry, oranges, pineapples, but blessed little space is given to urging the purchase of apples, pears, grapes or any Oregon fruit. Read the reports of the Manufacturers' and Land Products Show and note how little mention was made of the apple, prune, grape or pear. Much space is given to mention of corn, grain, hops. And, during the progress of the show, the pineapple was given 120 inches of display advertising in the Oregonian. If you have not perused the daily papers for material on apple day, Oct. 20, you should do so. Search for illuminating material and large display advertising will surely be interesting.

Grower's Problems in Selling.

Oregon fruit growers have one great problem—selling. The production, even with fungus, worms and blight, is easy in comparison with bringing home the bacon. Production must increase rapidly, at least for a number of years, and wide markets must be developed. Growers must do the development work either directly or indirectly. Anyway, they must pay the price.

By centralizing selling agencies, by reducing costs through eliminating a lot of useless machinery in selling and adding efficient equipment with money to force development of markets, the grower should be able to demand fair prices for his produce, and with fair prices he will soon be prosperous.

Mr. Harris' address was followed by interesting remarks.

Mr. Bateham: We have had a most excellent dressing down, the whole horticultural world. I wish, however, to mention that part of Mr. Harris' address where he rapped me so strongly on the Land Products Show, and its lack of publicity regarding the apple. The fact was that we had 80 front feet reserved for competitive displays of apples, but not enough of that fruit was brought in to make any sort of a creditable showing. In other words, the apple growers don't know a good thing when they see it.

Mr. Harris: Mr. Bateham is undoubtedly right, and he deserves much credit for the Land Products Show, but I want to say that I was simply paralyzed to note the utter lack of publicity the apple was given at that show, and I wish to emphasize the fact that if you have an industry in the state that is worth anything, get behind it. I am criticising the man who should have had something for the exhibit. Don't blame the newspapers. I could tell you how many times the word apple appeared in the three leading newspapers of Portland in the last thirty days—and its non-appearance would amaze you. You didn't have the showing that the peanut man should have made in those thirty days.

Dr. Macrum made a motion that a vote of thanks be extended Mr. Harris for his excellent address.

The motion was carried.

The meeting then arjourned until 1:30 in the afternoon.

WEDNESDAY AFTERNOON, NOVEMBER 17.

The meeting was called to order by President Washburn, and it was suggested that, as some of the men having papers were unable to be present, that the meeting be open to discussions.

Dr. Macrum: I suggest that Mr. Harris' paper be discussed.

Mr. Minton: I would like to refer to that part of Mr. Harris' address where he mentions the lack of apples served in the hotels and other eating places in the state. It is true in traveling over the state, that it is hard to find on the tables, or in the grocery stores, a reputable apple that one can buy at any price. Why would it not be the proper thing for this association to appoint a committee to take up work along the line of increasing the consumption of apples in the State of Oregon, and present to this association next year the means and methods whereby this work might be accomplished. I suggest that a standing committee of representative fruit growers, selected by the president, be appointed, whose business it shall be to take up this work and report something definite along this line.

Mr. McDonald: I second this suggestion.

The motion was made, seconded and carried that this committee be a standing committee, doing continuous work year after year for the uplift of the association—making it a real live association.

Prof. Lewis: I would like to amend this motion to the extent that, instead of using the word apple, we substitute the word fruit. The amendment was accepted.

Prof. Lewis in speaking of Mr. Harris' paper brought out the idea that volume does not mean prosperity. He also said:

Let us have faith in our business. I believe where we have been weak is that we come and listen to these addresses and get good thoughts, but take no definite action, and I think the apointment of a committee would keep us from losing interest. If the committee can consist of several good, live men, we ought to make a report by the end of the year, which would mean progress, and would enable us to go before the Legislature with a united effort.

Mr. McDonald: I make a motion that a committee of three be appointed on publicity and the sale of Oregon fruit in Oregon and that this committee be empowered to select sub-committees to work along whatever lines they see fit, and that each committee confine themselves to a particular line of the business, and that work begin at once.

The motion was carried.

Dr. Macrum (regarding Mr. Harris' address): The attempt is being made to organize a growers' council to control the output of apples. Two meetings have been held and the organization has been completed, but so far nothing definite has been done except start it.

We are going to form an association of fruit growers of Oregon, and we will have our own growers' council, who will control the sale in this state, and who will have an understanding with growers' councils in other states, so far as selling is concerned. The next meeting of the Growers' Council of the Northwest is to be held in January. Whatever comes out of that meeting is going to be the last word. This is in regard to the control of the output of fruit in the Northwest.

I wish to present the following resolution. That the reports gotten out by the Government on the production of apples in the United States are untrue, misleading and harmful to the fruit grower.

The resolution was seconded and carried.

Mr. Minton (regarding Mr. Harris' paper): I disagree with him when he says that orcharding is bound to become a rich man's business. I hope he is very much mistaken. In fact, anyone who has had a large number of men under his control, finds out how easy it is to lose money on their work. If we are going to combine orcharding with other things, or if orcharding is to become the city man's pleasure, it does not matter how much he loses; but if it is to become a real factor, the man who owns the orchard must go out and work and not superintend. I believe that orcharding, to be a profitable business, must come down to the basis where the man can do the large majority of the work in his own orchard, and if that is the case, it is going to be done on a small unit and under a co-operative basis for the market.

Mr. Harris: Some of the best orchards in Hood River today are worked by Japs, and in the next few years, a great deal of the work in the Rogue River Valley is going to be done by Japs. Go to the markets anywhere in Portland today and see the produce raised by Japs, Greeks and Italians. Each produces a peculiar class of goods. All the work in the orchards, five years from now, will be done by people who are not here now. In five years from today you will remember my prediction—that the work is going to be done by a class of people who are not here now, and the man who has a big orchard will be making money, and the little orchardist will be going back. No man should have less than 20 acres of orchard, but if he has less than 20 acres, he should get out of the business—he cannot stay if he does his work as he does it now. The war in Europe is going to change every industrial condition in Oregon. Every one. I hope I am wrong. It is crystalization that is coming. All the orchards in Hood River are being bought by Japs, and all the work in the big packing houses is being done by Japs. We are, therefore, having competition in the apple business. The Japs are working men. They do the work cheaper. They are buying every good piece of land in Hood River, and they will be doing likewise in Medford as soon as there is water for the land. You haven't given the consideration to the economic problems that are before the people in this country, as I have. When I want to know a thing, I get on the train and get it if it is there to get, and I want to tell you that there is less information in Oregon to the square inch, than in any other community I was ever in. I think if there was ever a time in the history of the United States when the apple industry needs looking after, it is now. If you don't save the apple business now, in ten years it will be in the ownership of the Japs, or in the hands of the big man in the city who drives out in his car.

Remark: The real trouble, in my estimation, is the question of merit. We are supporting throughout the United States, agencies that are working with our money and giving us what they see fit. We should have proper distribution. We should have men to put the apple to the front. There is a fault somewhere. The marketing solution is the problem. In the apple business it is a case of the survival of the fittest, and then true returns will come to that man.

Mr. Minton: I believe it is going to be the man who goes out in the orchard and does the work. The Japs don't live in town and work on the farm. They don't hire a lot of men to do the work, only at times when it is impossible for them to do it themselves. They go out on their farms and there do the work with their wives and children. If we are going to orchard at a profit, we must do the same thing. I believe it is practically impossible for a man in town to own a big orchard, and realize much profit from it if he is going to leave it to a manager to handle.

Mr. Groner: I wish to say that it is not only the fruit grower who must do his own work, but it also applies to the general farmer.

While I am here, I wish also to speak of the walnut industry. There is no question in my mind, unless some change takes place in climatic conditions beyond our vision, but what the walnut industry is going to prove one of the best in the Northwest, and it will be to the interest of anyone to see what is being done in this industry. I believe our production of this product will be as great as that of California. There is an enormous demand for this product and prices paid are extremely high. There is a great opening for this industry in this state. The possibilities are almost unlimited. I believe this industry is of sufficient importance to deserve more thought and care than it is receiving in a general way. Fruit growers might supplement their efforts by taking on walnuts as a side line in districts where the soil is adapted.

Mr. Williamson: I consider this the best time for a man engaged in the apple-growing industry. It is always the best time when it has been in the dumps for some time. The Japs have given me some concern, but I am convinced that apple growing requires the best grade of men we can possibly get. It takes more skill and ability in producing and marketing the apple than it does in the production of other fruit. The average apple grower of today does not compare at all favorably with the leading growers of the past. The quality of the apple has come down, and unlimited quantities of miserable stuff arrives in Portland. Perhaps a few Japs may rise to the ability of raising apples, but I don't know personally of any man who has made a success of apples in Oregon who has not lived on his place. Twenty or forty acres is about as much as a good apple grower can manage for good returns. Perhaps some men can do better under especially favorable circumstances. It takes a high grade man to succeed in growing apples. A man can raise prunes with success and live in the city. A man could handle 1,000 acres of walnuts as well as he could handle twenty acres of apples. A man who can handle his orchard right is going to see a good future before him. On the small fruit proposition, the white man has no chance with the Jap. The large majority of the Japs we have here are not of the grade to make successful orchardists, but they grow small vegetables successfully. The majority of the Greeks and other people of Europe who come to this country, are not of the caliber to manage apple orchards. If a man can stand by and work hard he will come out all right. If he can handle the marketing end of the proposition right, he will see years of prosperity before him.

Mr. Harris: I would like to ask if the Domestic Science Department of O. A. C. has carried on any experiments to show the food values of Oregon fruits and the possibilities of using them in more ways than they are now used.

Prof. Lewis: We are doing all we can in a limited way. We have done some good work with apples, grapes and loganberries, and will probably do some with pears.

The Department of Horticulture is carrying on investigations regarding the morphology of the apple, which deals with the study of fiber found in apples—and the amount of such fiber has much to do with the value of the varieties for cooking purposes. Prof. Kraus in our laboratory can tell quite largely by looking at the cross section of an apple, which variety it is, and there is a relationship between these cross sections and their cooking values.

Mr. Harris: I visited large dealers in apples in Portland and every man in Portland selling apples in a large way, and I found that no one knows anything about apples, and it struck me at the time that the first place in the state where we should begin to find out these things, is at the college. Many large sellers of apples told me they did not know the difference between apples. They just judge by the color.

The average woman does not know the difference and she does not know what to do with them when she gets them. And the ignorance of the value of the apple is why it is not sold and used to a greater extent and experiments as to its value should be solved at O. A. C.

Dean Cordley: If investigations are to be made as to the cooking qualities of the apple, they should be made here, but we are handicapped by the lack of funds. The state does not give us a cent for investigational work and at the present time we have nothing to work with except Federal appropriations and half of those are used for investigations which must be reported to the Government. It is not a lack of desire on our part to know about these problems, but it is the lack of money.

Mr. Witherspoon: There is a feature of advertising which would be of the highest type. I recommend that a book be published giving detailed information as to the use of apples, and that one of these books be placed in each box of packed apples in the state.

Mr. Bateham: That would follow in the hands of the committee already appointed.

Mr. Washburn: I suggest that we take up the matter of our meeting place for next year. Would it not be a good policy to go from place to place until we have visited different sections of the state?

Prof. Hetzel: Last year it occurred to us that O. A. C. was probably the logical place for the meeting of those organizations interested in the up-building of agriculture in the State of Oregon.

We realize, too, that there is a demand for a certain amount of practical instruction to be given during a very short period, so framed as to be of advantage to men and women who can't spare time to take a longer course. So we thought we would combine. We have a Home Maker's Conference Week. Last year we registered two thousand and it was held at a time when the students were having a vacation in order that all the facilities and accommodations about the city might be available for our visitors. Last year the principle organization here at that time was the Dairy Breeders' Association and they were so pleased with the opportunity of meeting a large number of people and the larger attendance, that they voted to return this year. In providing what would seem to be of great value to those coming that week, we have felt justified in making a small appropriation to bring one or two of the ablest persons in that line to the college at that time. Last year we found that there was a tremendous interest and a great appreciation of men of that type—and we find that by organizing in this way, we can persuade the Department of Agriculture to send some of their representatives to attend also. We do feel that because of our experience last year and the experience in other states, that it is worth your consideration. We should be glad to have you give the subject consideration.

Mr. Minton then read a letter of invitation to the Society to come to Hood River next year.

Hood River, Oregon, Nov. 15, 1915.

C. D. Minton, Esq., Secretary,
Oregon State Horticultural Society,
Corvallis, Oregon.

Dear Sir: Our directors at a meeting this morning directed me to invite the members of your Society to name Hood River as the place of meeting in 1916. Without going into details as to what we have to offer, I will say that we have the hotel capacity, and that the weather being at all favorable we have attractions in the way of a wonderful outdoors to offer you that cannot be found elsewhere in Oregon.

The Commercial Club assembly room will be placed at your service for the meetings, and the other rooms of the Club at your disposal.

We hope to have the pleasure of a favorable answer, and remain,

Very sincerely,

R. E. SCOTT, Secretary.

Mr. Armstrong: I favor the proposition of coming to the college for the annual meetings of the society.

Mr. Minton: Does it mean for us to come during Farmers' week, or when we can best come?

Prof. Hetzel: We thought it would perhaps be of the greatest advantage to come during Farmers' week; however, we should be delighted to have you come at any time if it would be of advantage for you to do so. As a result of the dairy meeting here last year the members were increased. It seems to me an appropriate time as there are many attractions instead of only one.

Mr. Minton: We have specific dates within which we must hold our meetings—November or December.

Mr. Otis: I agree with Mr. Armstrong that we come to the college. It is the only place to come as there are more advantages here.

Dean Cordley: I wish to say that in extending this invitation to you the college does not wish to appear selfish. We are your servants and it is our pleasure to serve you. I do wish to say, however, if you do decide to come here next year, we shall be glad to entertain you, and whether you come during Farmers' week, or any other time we shall do all in our power to assist you. If you do come we can bring in one or two men of national reputation in horticulture for your interest.

Mr. Wliiamson: I wish to say that if the society should come here it would be better to come at some other time rather than during Farmer's Week. When our meetings were held in Portland during the time that other societies were holding their meetings, we suffered as a consequence. If we should meet during Farmers' Week, there would be so many other attractions at the college during that time that our attendance would not be as large, and then again the faculty of the college would not be able to give us as much of their time as they would at some other date.

Mr. Bateham: Personally, I prefer coming to the college, but I think we should consider holding meetings at some central point where the attendance would be as large as possible and where we can do the most good. The meeting ought to be held in November or December.

Prof. Lewis: I want to take this occasion to thank you for coming to the college this year. I think every horticultural student signed a petition to have the meeting here this year. The finances of our exhibition, held in connection with this society meeting, were borne personally by members of the faculty. No student has been excused from classes except during the three days of the exhibition. I believe it is one of the best things we do. It gives the boys enthusiasm. After they go out they are going to have enthusiasm for shows and fairs. I will say that your coming here to the college means a great deal to the Horticultural Department and to the boys, and I hope you will come again when we can do even better than we have this year. We are only too glad to have you come at any time.

Mr. Roberts: I am sure every member of the society feels appreciation for the work done by the faculty in preparing for our reception and entertainment, and we are all interested in the welfare of the college and know what it means to the state of Oregon. It is a great advantage for us to meet here. I suggest that we go to Eastern Oregon and then after that come here annually. If we can help the boys we ought to do so.

Mr. Groner: If we do meet here, let us not do so during Farmers' Week. There are so many things going on during that time, we would not be able to devote our entire time to horticulture. I favor meeting here, but not during Farmers' Week.

Mr. Johnson: We would like to have you come here next year.

Mr. Mason: I favor coming here to the college, as it offers us a splendid opportunity of asking questions and gaining information from members of the faculty which at other places would be impossible.

Mr. Bateham: I move that the matter be left to the executive committee for decision.

Mr. Washburn: The motion has been made that we leave the matter of the next meeting to the executive committee. We want a full discussion. Are we in favor of going north next year and after that elsewhere, and finally coming here annually? Until we have made a trip, I am in favor of putting the meeting on wheels.

The motion was lost.

Mr. Armstrong: I move that the next annual meeting be held in Corvallis some time in November.

Mr. Roberts: I move that we substitute Hood River in the place of Corvallis, next November or December.

The motion was seconded.

Mr. McDonald: We should consider what is the best for the society as a whole. Personally, I would like to come to Corvallis, but I can't conscientiously vote for coming here, and I feel that in so doing it would be selfish. I favor keeping it on wheels. It is well to help the boys at the college, but we have to fight out the questions of today and let the boys fight out problems of tomorrow.

Dean Cordley: The college does not wish to appear selfish. I have not suggested to a person that the meeting should be here. Many particularly stated that they would like to come here. However, I feel that it might be disastrous to tie it down to any particular place at this time. If you do come, however, we will do all we can to entertain you.

Upon voting the motion was amended. A vote was then taken on the motion as amended.

Mr. Washburn: The motion is carried. We go to Hood River on the date set by the executive committee in November or December. I recommend that we elect the officers for the ensuing year.

Mt. Bateham: It was agreed by council and attorney for the association last year at the meeting at Medford, that we could go through a form of election and have another meeting in Portland. Legally, there could be no election, but while we are on wheels, we can go through a form wherever we may be and then when we return to Portland, have a meeting there, making the election legal.

Dr. Macrum: I move that Col. Washburn be elected president.

Mr. Johnson: I second the motion.

Mr. Washburn: Don't you think it would be well to have the president on wheels also?

Motion was carried. Mr. Washburn elected president.

Mr. Roberts: I recommend that Mr. Johnson be re-elected vice-president.

Dr. Macrum: I second the motion.

Motion was carried. Mr. Johnson elected vice-president.

Mr. Groner: I move that Mr. Minton be elected secretary and treasurer.

The motion was seconded. Mr. Minton was elected secretary and treasurer.

Mr. Bateham: I move that Mr. Chas. McNary of Salem be elected trustee for three years.

Motion was seconded and carried.

The meeting then adjourned until 9:30 Thursday morning.

THURSDAY, NOVEMBER 18.

Meeting was called to order at 10:00 by President Washburn, and the following committees were announced:

Legislation—A. P. Bateham, Chas. McNary, E. C. Roberts, Dr. C. A. Macrum, M. McDonald.

Resolutions—E. C. Roberts, J. W. Pomeroy, A. C. Allen.

Auditing—F. W. Power, C. A. Burt, H. M. Williamson.

Report of Meeting—C. D. Minton, H. B. Miller, A. P. Bateham.

The chairman of the publicity committee desires to take the matter under consideration, so that a good, live, active committee can be appointed. I, therefore, postpone the appointment of that committee. Members will be notified later.

The president later appointed B. W. Johnson, E. H. Shepherd, E. C. Roberts, S. V. Beckwith, M. McDonald.

Mr. C. A. Malboef, not being present. his paper was read by C. D. Minton. The subject of the paper was "Fundamentals and Practices in Marketing."

FUNDAMENTALS AND PRACTICES IN MARKETING

By C. A. Malboeuf

General Manager, Western Oregon Fruit Distribuors, Portland

I asked one of our leading loganberry juice manufacturers the other day, how much larger his 1916 output would be over that of the past season. He said, "When we succeed in making our product of the exact character we know the universal trade demands, you can look out for real progress. We are in the initial stage of the business now, experimenting if you will, and while in that condition no one need expect startling results. We will keep up that policy until we get down to a definite, unchangeable formula which the world recognizes as a perfected standard. We will either make a hundred per cent good, or we will make no splash. Standard quality first—greater output later."

The utterance of the loganberry man reflects the policy invariably followed by all great capitalized institutions. The large drug concerns of this country sometimes spend years of time and thousands of dollars before placing an important compound on the market. The art of putting up right is the first imperative need in the laboratory. These policies deal with the very fundamentals that must be observed in the fresh fruit business, namely preparedness on standard lines. We can bear in mind, of course, that whereas in the absence of a satisfied standard, the loganberry juice manufacturer can minimize his annual output, pending further achievements in his scientific departments, the grower has no means whatever of curtailing his output, except through sheer waste or loss. It is all the more reason, therefore, that the grower must get down to those fundamentals of standardization because, without their development in finished form, a greater volume of unsatisfactory product will be thrown on the markets annually, and a correspondingly greater record of disappointments in the shape of low returns, will be the rule and not the exception, year after year.

I should like to ask whether the same clear cut policy is as seriously entertained by every grower in the Northwest. Unfortunately I realize we are far distant from any such condition. As a matter of fact I do not consider that we ourselves have yet emerged from the experimental stage of the fruit business, with a mere 20 per cent of our entire apple acreage of some five hundred thousand acres, in bearing. If the grower and the loganberry juice man were in the same complete harmony on the necessity for a positive standard, however, what a difference there would be in the marketing of Northwest fruits! It is true the so called problem of marketing, might still continue to be a leading topic at these assemblies and that tons of grief would be removed from the salesman's shoulders, but the reports from the markets would be stripped of their greatest terrors to the grower, in the form of rejections, and a multitude of other costly and nerve racking influences, that are, today, actually a deterring factor in the minds of many growers against any intelligent effort on their part to reach the point where the ideas of the trade and the growers must harmonize—or the grower himself continue to be the victim of his own mistakes.

I place this subject before you in all seriousness, because in my judgment the question of standardization is by far the most serious problem confronting the fruit industry in the Northwest at this time. With our annually increasing production, it is indeed a greater problem each year over its predecessor. I do not pretend to suggest no progress has been made in standards, because from the earliest days notable progress has been made, but I do say that the progress right now is too limited, confined as it is to those cooperative organizations of seasoned character and the right spirit, while the ideals in standardization are, further, confined to those fewer organizations whose brands are accepted as staple the world over. I seriously doubt if anything in excess of forty per cent of the Northwest apple pack may conservatively be regarded as fit to come under the qualifications of accepted standards, in pack and grade alone. Failure to come up to other essentials that must be equally considered, will probably place the actual percentage of defect proof standard stock shipped from the Northwest each year, as not exceeding twenty-five per cent at the very highest.

The unfortunate reason for this deplorable condition is not the absence of effort of the principal districts and shipping organizations, to agree upon uniform grade and pack rules, which in themselves are mere rudiments to the entire question. The Northwest is supposed to be operating today under a uniform grade and pack rule. In most of the cooperative organizations it is as rigidly observed as is possible, some associations standing out foremost in that respect. The individual shipper, the private shipping companies, the individual grower, the entire territory over, disregard the rules wholesale; some, indeed, take advantage of the rules by building their pack sufficiently beneath the standard of each grade, as to provide excuses for cutting the standard values of those grades. An unfortunate misconception, too, of what constitutes proper shipping condition, a misconception of the rules themselves, and a further unfortunate tendency to measure the individual pack by local surroundings and not by the broader field of common sense necessities, all combine to tear down the one thing upon which the Northwest must depend to perpetuate the existence of its apple industry. Let these conditions continue, and within five years, we will not be boasting to the world of our quarter of a billion dollar industry, and our half million of flourishing apple trees.

Oregon as an apple shipping section, has taken little part in this great industry, with the exception of Hood River, Rogue River, and the Eastern parts of the State. The remainder of Oregon has done little in the past, and in recent years practically nothing but to nourish its young trees. It is largely because we have in the territory between Portland and the Umpqua Valley inclusive, upwards of twenty thousand acres of these young apple orchards, in hitherto unknown apple producing districts mainly, that I have chosen this particular subject of fundamentals for this occasion.

In order that I may not be misunderstood on these figures, I invite attention to approximately 2500 acres in the new regions of the Umpqua Valley, 3500 at Sutherlin, 5000 in Lane County, including some 2000 acres at Creswell, 500 at Loraine, 2000 at Alvadore, approximately 1000 acres each in Benton, Linn and Marion, and some 1500 acres in Yamhill County, besides a solid block of close to 5000 acres near Dufur in Wasco County, not to mention a multitude of smaller tracts in other regions which I have not stopped to describe. We had better remember also, that a very considerable part of these orchards are six and seven years old, and will in all probability, commence to bear next year in generous volume. The question is: Are we in a state of perfect preparation to offer the product in standard form to the markets?

The fundamentals to successful marketing, therefore, aside from a solid cooperative organization taking in these entire districts, which in itself must be the structure upon which our future operations must rest, are:

1st. To recognize our product strictly as it is, not from our individual standpoint, but from the standpoint of market standards, as compared with the product of all other districts throughout the United States, in appearance, soundness and other features.

2nd. To know exactly what it represents in keeping quality, the greatest attribute to intrinsic value.

3rd. To produce the fruit in its highest possible quality, as far as horticultural science can promote.

4th. To know when and under what exact conditions, it should be picked from the trees.

5th. To understand scientifically, and carry out practically, the speed at which the fruit must be moved to the markets.

6th. To adopt and rigidly follow the uniform grade and pack rules accepted and followed by the remainder of the Northwest, especially by the larger cooperative organizations.

7th. To thoroughly understand the exacting and many market conditions and requirements that serve to render the selling of the box apple a matter of common sense, and at the same time to know with equal completeness the multitude of slipshod methods that contribute so materially every season to help depress and demoralize the markets.

1st. There is little to say on the first point except to make the emphatic statement that it is the recognition of the trade in the markets, based on practical comparisons and conditions, and not our own belief, based on natural pride sometimes, and our own fence posts at other times, that places the final stamp of quality "as is" on any product. The trade measures that standard by comparison, with the product of innumerable other districts as their guide. Existing superiority never gives the trade opportunity to discredit any product. Indeed that very condition is an insistent promoter of demand. But we must see our own product as the trade sees it, and the quicker we get that vision the better. Then, and not before, will we be able to better appreciate its actual worth, grade, pack, and other conditions considered, never forgetting "condition." The ideal Northwest boxed apple in the markets is that which is perfectly sound, smooth, true to shape, true to color, without blemish, perfectly graded, perfectly sized, perfectly packed, and in perfect condition for storage. Values start at that basis and gravitate slowly or violently away according to the manner in which the product stands the test of those requirements. The market value of Northwest apples, furthermore, is based on the highest standard that is produced and packed.

2nd. I think we all know the unenviable reputation the Willamette

Valley apple has possessed for many years, namely for not keeping well, and therefore unsuitable as storage stock. I think the expression of that belief is well intended of course, because necessarily it is based on experience, but I do not believe it is due to the fruit itself. I know through the handling of Willamette Valley apples for some 5 years that it is the misuse of the fruit before leaving shipping point, delayed picking, delayed packing, delays in warehouses, delays in shipping, that may be correctly charged with this unfortunate impression by so many of the dealers the country over. At any rate this reputation must be overcome, and avoided not alone in the Willamette Valley, which I mention merely incidentally, but in every other section, and we can only accomplish that by a clear cut demonstration to the world, beginning with ourselves, that we have a product that in keeping quality, will stand comparison with that of other districts in the Northwest. It is up to our own selves and to no one else to do that, and I repeat that organization, of the most efficient and systematic character, and not individual or conflicting effort, will alone bring our actual conditions to the surface, as no other element possibly can. If we succeed as I am convinced is within our power to do, we will have added an inconceivable value to the product.

3rd. To produce the fruit in its highest possible quality, as far as horticultural science can promote. I believe it is commonly admitted that without the use of sprays, regularly and scientifically applied, our apple industry in the Northwest would have no prominence whatever either in the domestic or foreign markets. But I believe also we must realize that something beside crop prospects must be the basis for careful and complete spraying each year. Finally I hardly think I am wrong in suggesting that young trees within at least two to three years of their initial bearing, must be as carefully sprayed as the bearing trees, not only in the main mixtures, but also for fungus, anthracnose, etc.

While we are discussing facts, we may as well be plain in regard to certain conditions so manifest on many sides today, and which in my judgment seriously threaten our future prospects, unless we take matters in hand vigorously. More or less frequently visitations of fungus troubles during the past several years, have spread as widely into the markets, as in the orchards themselves. This year fungus was extremely prevalent in some of the districts in Oregon. That fact was quite generally circulated by some of the Washington shippers. Disregard of uniform grade rules have had to be resorted to in order to take care of those affected apples. In other words, our occasional disability in not being able to produce fruit without blemish, has been made the basis for letting down the bars of grade rules. It is obvious that something heroic and universal must be done to definitely solve this fungus question in order to eradicate it. In the absence of a definite treatment that will do so, we must do the next best thing, and carry out every scientific principle at our command today to oppose the growth of fungus, if we cannot get rid of it altogether, and this same rule must apply to every other insect, fungus and bacterial trouble.

I want to take a little different tact on this, and point in particular to our immense forest of young trees, many of which I say will be in bearing next year. Personally I have seen and gone through a very large extent of these new orchards. In too many instances, the evidences of lack of care are prominent, in some cases criminally visible. I am speaking now of 5, 6 and 7 year old trees. I have tried to learn the actual motive for the growers not spraying those young trees. I have been told in places the owners lived in the east, and had instructed no expense incurred on the property this or that season. In others the growers themselves have told me that since there was no crop in sight this year, they thought the trees would get through to next year safely. In many cases where the trees carried their first commercial crops this season, the trees were notsprayed. I have also been informed that the same conditions will apply next season, namely a crop in sight means a fungus spray, no crop no spray. Now the point is, with these 20,000 acres of apple trees growing, and so close to bearing, what effect is the failure to spray for fungus and anthracnose going to have? What sort of a crop will the first and succeeding crops be, if the fruit is wilfully permitted to come on with deadly certainty of fungus, and perhaps other affections? The Oregon grower certainly faces enough problems in the way of freight rates, isolations from the principal markets and other handicaps, as compared with other districts in the Northwest, to invite at the eleventh hour previous to a great production, an assurance of fungus affected fruit. What is going to be done with it; certainly it cannot be shipped to the general markets of the world as the perfected standard of the Northwest pack, as it may rightfully be without its mask of fungus to ruthlessly destroy its greatest element of value. With cleanliness the all powerful asset of the Northwest box apple, surely we must be able to recognize and throttle any obstacle in the way of disease that bids fair to give us a body blow in the markets before we can even introduce our apples in a broad manner.

4th. The correct time for picking apples. There is nothing in the calendar of marketing necessities more important than this one thing, and yet there is perhaps none so commonly misunderstood or realized, than to remove apples from the trees at the exact time when they should come off. I shall not go into detail as to the physical cicumstances on this subject. Nor indeed can it be set down in black and white when the apple should be picked, however elaborately the situation might be treated. There is a correct time when they should be picked, that is enough. There are certain weather conditions under which they should not be picked, and that also is sufficient. It is a fact, however, that more than 90% of all market rejections or claims arise from the fact of the fruit being overripe. Added to poor grade and pack, trouble is almost inevitable with practically every car shipped, containing those combined defects. But the overripe condition itself is the chief cause of all rejection and kindred troubles. In ordinary seasons the complaint from the markets reach appalling figures.

In 1914 it has been openly stated that fully 85 to 90% of all early fall varieties, like the Jonathan, etc. left shipping point in an admitted condition of full ripeness that developed into an equal proportion of overripe stock on arrival in the markets. Many of the later fall and winter varieties also reached the market ripe to overripe. Consequently, there was only a small proportion of Northwest apples that year fit for storage. It is true the climatic conditions of 1914 all over the Northwest were extremely radical—a drought in practically every district, an abnormally early spring, an unusually hot summer, and an inevitably early maturing period, all of which tended to weaken the general character of the apple. But the shipping of overripe stock was not natures' act. I have the figures from one organization showing the following percentages of firm to overripe stock:

1st. Firm, capable of long distant shipment and full cold storage period, 16 per cent; 2nd, hard ripe, good for short storage but also good for early consumption, 18 per cent; 3rd, full ripe, requiring immediate consumption, substantially meaning "dead ripe," 42 per cent; overripe, 14 per cent. The analogy between full ripe and overripe, however is so close, insofar as the condition of the fruit on arrival in the markets is concerned, that both may well be termed "overripe" at the start. Therefore but 18 per cent of the total was of the character the trade most invariably buys Northwest apples for, namely for gradual movement at profitable figures out of storage. We can well shudder at a showing of this kind.

The markets were strong enough this year to have provoked no complaints or rejections whatever based on grade and pack, and other conditions aside from the state of maturity itself. Yet there have been an unbelievable number of trouble cars, with their mournful tribute in allowances, due to overripeness. There are numerous reasons for overripening of fruit before leaving shipping point. It invariably begins in the orchard. I have found in this section innumerable cases where the apples were not picked when they should have been, due to the grower's desire to get his prunes off first. In as many other instances, due to the grower's desire to get better color. In still other cases many association growers hold their product back, either on the trees, or in the packing house, waiting to see how the market will develop. Independent growers most frequently destroy their best opportunities by waiting for the market to advance, and not packing or disposing of their product in the meantime. But I have seldom failed to find where a thoroughly efficient cooperative organization, with equally efficient field inspection service, had anything but a negligible quantity of full ripe fruit to ship. I have not yet seen any case where they were compelled to ship apples, overripe. If we remember for the last time that the best asset we possess in our Northwest apples, is its reputation for cold storage keeping, we can well realize how any apple having the slightest departure from one hundred per cent firmness, cannot possibly carry one hundred per cent of otherwise market value. Also that firmness is absolutely paramount to color, where the fruit itself, or the variety involved, is actually or possibly intended for cold storage. Color should be allowed to cut no figure whatever in disparagement to firmness. If the color at picking time is not enough to pass it into the Extra Fancy grade, holding it on the trees for more color, and correspondingly sure trouble, will certainly not graduate it into the extra fancy class later. Color and common sense don't go together under those conditions.

5th. To understand the exact speed at which the fruit must be moved to the markets. This phase is substantially covered in the preceeding paragraph covering the time for picking. However, while the best interests of the fruit always demand its being loaded into cars and started on its way to market within 24 hours after being picked, particularly when intended for cold storage, it is not always possible to do so. Hence measures must be taken to protect the original condition of the fruit as fully as possible. Every apple, however, should be placed in the packing house the same day it is picked, and in as cool a condition as possible. Nor should it be stacked in the packing house while in the orchard boxes, unless plenty of ventilation space is left between each row and each tier for a maximum circulation of air. Furthermore every possible precaution must be taken to see that the packing house is given the fullest ventilation—every aperture open at night, and as many as possible, closed during the day. The packing house should be as well equipped for protective purposes as a cold storage plant itself, because it automatically displaces the latter. In our newer districts, the old time packing house must give way to the scientifically constructed building, equipped with every necessary device for perfect ventilation, intakes being next to the ground, under and through the lower floor and shaft ventilators for carrying off the warm air. The object of properly caring for apples after being placed in the packing house is to keep their condition as nearly original and normal as possible. Hence the fruit must be kept as cool as possible, and not be subjected to climatic conditions and temperature changes which from their alternating nature must serve to unduly ripen the fruit. Whether or not this is before or after packing, the conditions and necessities are absolutely alike. Poor, unsantitary, musty, close, hot packing houses are as destructive to the apple, as allowing them to stand on the trees until they are ready to drop off.

6th. It is not necessary for me to go into the technique and details of grading and packing apples. Yet if one will think of the handling of eggs on the one hand, as far as frailty is concerned, and of ice cream, as far as perishableness is concerned, on the other, this might give us a faint idea of the delicateness which must be observed in handling apples for the market. The necessity of rigid compliance with uniform grade rules is clear at every point in the game. Comment is, therefore, passed up. The act of grading and packing too may be briefly mentioned and dismissed. Given condition itself as already fully discoursed, nothing in the way of standard essentials is more vital than a proper grade and pack. And these matters are not mere automatic conditions that the ordinary layman or woman can master without rigid experience and graduation from a packing school. While both grading (or sorting) and packing are equally of the highest importance, they can be respectively defined as being an exact science and a mechanical science. Thus the sorting for color is indispensable to good packing, requires far more patience, thoroughness and instant judgment. Packing skill consists in getting apples of exact size, in the exact position throughout the box to insure a perfect pack in appearance, solidity and bulge. The ideal pack is clearly noticeable at a distance. The slack, indifferent, incompetent, inexperienced pack, equally so. It is readily detected from the outside by the lack of bulge; to the touch it is evident by the partially filled and shifting contents; in the interior by the general sloppy appearance, the lack of finish, by the range of sizes in the box, often four to five different sizes being employed to represent the one size stamped on the outside, and by the large or small sizes extreme in character used to bolster up the contents, and by the absurd use of too large wrapping paper for the size of the apple represented.

Inspection service. Inspection in the field and on the warehouse platform and floor are essentials to correct efficiency in a well regulated association of growers. Not a single box should be nailed after packing, except the eye of the floor inspector has first been concentrated upon it; no apples should be packed in the warehouse without that same inspector being fully acquainted with their grading, and condition, and no lot should be accepted on the warehouse platform unless a sufficient percentage of that lot has been rigidly gone through and either passed O. K., turned back for better grading and packing, or degraded as the case may be. The field inspector can be made invaluable to the grower's and the association's interests at the same time. The best work in the Northwest, the most conclusively satisfactory results, have been developed through that triple inspection service. It is vital to proper standards. It is imperative to protect the reputation of the district and the association. It is the most important work connected with any fruit growers' association. No label is ever pasted on the box in that character of efficient organization unless the actual condition and character of the conditions are ruthlessly tested and found to meet that standard. No car is ever loaded unless the condition and every other feature of grade and pack are exposed, absoltuely known, and reported fearlessly and thoroughly. The inspectors are the eyes of the association, and those eyes guide the organization to success or failure as the case may be.

7th. While the market requirements are exacting and many, they are in actual practice on the grower's part, if correctly followed, simple and few. The trade, first of all, demands standard as the basis for its purchases. It prefers to purchase f. o. b. shipping point, and neither from rolling cars, mixed cars, on consignment nor auction. It wants to buy when it wants the fruit, what varieties, grades and sizes it requires, and it is ill content to have impossible mixtures, ill constructed grades and packs, and unreliable and irregular condition, thrust upon it. There is only one way to meet the trade right, and that is on its own ground of necessity, with the growers' organization making outright sale of the product upon its own ground, that is to say at a fixed value at shipping point. That is the ideal basis of trading. The next thing therefore is for the organizations to place themselves in position to do that sort of trading with the distant dealers.

Estimated crops. Intelligent assembly of fruit, and the selling of it begins months or weeks, according to variety, before the season opens. This is the necessity for the growers' organizations putting themselves in position to accurately estimate their crops at intervals, beginning first with the blossom period, then with the period following the customary so called June drop, then the final estimate made early in August, usually the first week. Many inexperienced growers throw up their hands at the idea of trying to estimate the growing apples on their trees. Nevertheless proper and timely estimating is as imperative as spraying, thinning and picking. It is surprising how close many of the older and most efficient associations come to estimating their crops, not only their August estimate after the apples have reached a comparatively large size, but the earlier estimates. I personally know of some of the Washington associations estimating within five per cent of their subsequent tonnage, not alone by varieties, but also in possible grades and sizes. That ability immediately places the organizations in the most favorable position possible to dispose of its crop successfully and early, by offering it through the sales organization to the trade at large early in the month of August or September. The best selling records in the Northwest have been made along the lines of these estimates.

Estimates furthermore enable each organization, through concentration of the figures through their central organizations, to immediately reach a most accurate estimate of the total Northwest crops for the season, and this more than anything else serves them to best reach sound conclusions as to values, while the offering of the product in actual specification form to the trade well before harvest, develops in an incredibly short space of time, a definite reflection of what the demand within reasonable limits of certainty, promises to be.

The growers' organizations that adhere closely to the fundamentals as presented herein, and perfect their conditions from year to year, need have little fear of physical troubles in the growers' orchards, or of trouble in the field and in the warehouses. The wise and fearless carrying out of every problem will carry their members to success, while too many of the unattached growers, and idealist individuals, will be struggling to dispose| of an improperly conditioned and indifferent pack and finally fail to secure the maximum values which organization and experience alone will secure.

Mr. H. B. Miller then gave the following paper on the Marketing of Prunes:

MARKETING PRUNES

By H. B. Miller, Director of School of Commerce, U. of O.

In as much as I am extensively interested in the production of prunes, I beg to offer a few suggestions to this horticultural meeting in relation to the problems of marketing.

Within the past few years there has been much planting in Yamhill County, especially in the southern part of the County, which will soon be in the market. In the vinicity of Sheridan alone there are probably two thousand acres or more that will be ready for market soon. The problem of preparing this quantity in proper condition for marketing is one of immediate interest to the growers. In all that district lying between Newberg and the southern boundary of Yamhill County there seems to be no well organized plan for the proper handling of all this great quantity of prunes.

The first problem is, of course, that of proper drying. Some organization should be created whereby this product will be handled by an organization of some type that will establish a uniform standard. Inspection and regulation should be provided so that a substantial uniformity of product may be created in the dried form. There should be some central point for processing these prunes under the same organization and management that will give substantial standard to the product, when ready for the market.

These are absolutely fundamental facts necessary to the success of the industry. The growing of the product is no longer the only function for which the grower must be responsible. It is as much his duty to see that the product is properly and uniformly dried, and processed, as it is for him to see that it is properly grown. The grower, therefore, by some fom of organization must do this work of preparing his product for the market, or it will not be wisely and uniformly done. The question of how and by what manner this product shall be handled in the markets is a fairly debatable one, but it seems to me that the question of proper preparing for the market by the growers is beyond the matter of discussion. It is uniformly agreed by growers and dealers alike that standardization of the product for the market is fundamentally essential for the purpose of securing the best returns for Oregon prunes.

So far as I am able to discover, there is no system at present devised or likely to be created that will be a success in this matter other than the one which throws the burden of responsibility on the grower himself. If this work is left to the dealers it seems to me that there is little assurance of any uniformity or high standard being established.

Looking a little further into the subject and taking the past year as a criterion, it should be plainly evident to all growers that if this work is left to the dealers, the growers cannot expect full returns for their product. The dealers can and no doubt have combined for the purpose of forcing and holding prices to the grower as low as possible, and after the crop has been purchased, then doing everything within their power to secure high prices for the finished product. This is only natural, and, so far as I can observe, a reasonable expectation, and to my mind the only escape from this situation, which is against the growers' interest, is for the grower himself, by and through his own organization, to provide for standardization of drying, processing, and preparing the product for the market. If this is properly accomplished on a large scale, there can easily be some method devised of marketing that will give the grower far better returns than any other method so far discovered.

In view of the vast quantities of prunes that are about to be produced in the State of Oregon, and especially in the district to which I refer, it occurs to me that this horticultural meeting can do no better service to the fruit growers of this State than to provide definitely for this situation, and I sincerely hope that some methods will be taken to bring about this much to be desired arrangement.

The Oregon prune being a distinct product from any other, undoubted requires some special method of preparation and marketing. The dealers and growers signally realize that under the present method, no proper arrangements are made for standardization, and it is also clearly evident to those who have thought of the problems involved in marketing that some better methods than those existing must be created.

It seems to me that the California Associated Raisin-growers system of marketing should be thoroughly investigated and reports made to the prune growers as to the probabilities of that method being more satisfactory for this industry than anything that has yet been devised. I sincerely hope, therefore, that a committee of leading growers be appointed to make a special study of the Associated Raisin-growers organization and report their findings to the prune growers of Oregon.

The entire Oregon prune industry is dependent upon some properly organized method for standardizing their product and marketing it. This subject is of too great importance, not only to the growers but to the State as a whole, to be further neglected, and there should be a well defined and earnest effort made by the Horticultural Society to solve this problem wisely.

The growers in Yamhill County, outside of the district around Dundee, are certainly in a very demoralized and disorganized condition, and unless something of a constructive and substantial nature is done soon to standardize the product and systematize the market methods, the loss to these growers will simply be enormous. I beg, therefore, that this meeting do not adjourn until it has appointed a representative committee to investigate thoroughly the California Associated Raisin-growers' methods and recommend something that can be successfully adopted for the handling of the Oregon prune.

Remarks: Prof. Lewis: We started two years ago on this problem of the standardization of the prune, and this institution put one man on this subject. We found the first thing in any standardization was that one must hold out to the people what kind of standardization they can adopt—a standard which the producers could meet. No one seemed to know what standardization we could adopt. It must be carried from the time the fruit leaves the tree through the washing, dipping, and drying processes. Specific gravity is necessary. We have done some work with specific gravity, and we believe there is a future for further investigation along this line. There is a considerable difference in specific gravity of the prunes to be found on any given tree. The first thing we got up against was this: The amount of heat, the centralization and circulation of heat, the amount of moisture or humidity of the atmosphere, and the relation of all these features to the general atmospheric conditions. Every man that I came in contact with along the line thought he was preparing the best prunes in the state. It takes a long while before we can see daylight. Just about the time we got ready to do something, the legislature withdrew the money for us. Since the appropriation has been dropped, I have been blamed by the prune men. However, in spite of the appropriation being lost, we are staying with the work to a certain degree. We are taking a small appropriation of the Government money, rather than drop the work. We have a small dryer where we are trying to work out temperature, air circulation and humidity. The problem of standardization is a very large one. It takes a long time to get results. I am very much pleased so far with the work. The Agricultural College was awake and came to the need of the problem and we did everything we could. We have also had to drop loganberry work on account of the lack of appropriations. I think considerable could be done by constantly going around and having meetings, giving out hints that might be helpful to the people. I am not very hopeful, however. The great danger of reporting work carried on for only one or two years, is that, on account of varying conditions (climatic-difference in the ripeness of the fruit-difference in evaporation, etc.), valuable advice could not be given. The work should be carried over a series of years.

Mr. Miller: I move that Prof. Lewis be authorized to select a committee from the leading organization of prune growers, to assist in a study of the question, as to how to standardize the production. The immediate necessity is to inspire the grower with a sense of responsibility. This committee may also include some of the buyers.

Prof. Lewis was authorized to select a committee.

Mr. H. B. Miller: I desire to endorse the splendid exhibit that has been gotten together by the pupils of the Horticultural Department of the O. A. C. in honor of the meeting of the Oregon State Horticultural Society. This exhibit is worthy the highest praise that may be given a display of this sort. It not only demonstrates what the school is teaching but it also demonstrates what may be grown in this beautiful state of ours. We see here products from all over the state in the vegetable line from sections where we would not have known it was possible to grow them had they not been shown to us at this meeting.

There is another and to my mind the greatest feature of this exhibit: That is the fruits that have been brought from our neighboring states and from Europe, which gives us an idea of the competition which we have to encounter in our trade relations in different parts of the United States and Europe. There is especially an exhibit of Balwdin and Newtown apples, as well as Spitzenbergs, that show us definitely what we must come in competition with in the markets of the world. These facts we must take into consideration when we are packing and shipping into these markets.

Mr. Washburn: I wish to endorse what Mr. Miller has said regarding the Horticultural exhibit. If the exhibit was at San Francisco, it would be the talk of the town.

Prof. Bouquet: I would like to suggest that we have a branch in this society for the vegetable growers of this state. Every vegetable grower wants an association of some kind. I would like to have a committee appointed to look into the question of having a vegetable garden branch to this society. Don't make your Horticultural Society so narrow. Hood River is not only famous for its apples, but also for its asparagus and other vegetables.

Mr. Roberts: I believe that a branch of this society for vegetable growers would be better than a vegetable society by itself. It could do better work. I move that a cqmmitttee, consisting of Prof. Bouquet as chairman, be appointed, giving the chairman power to select his assistants to the number of two, three or five, as he sees fit, rounding up the vegetable growers of the state and organizing a vegetable growers' branch to this society.

The motion was seconded.

Mr. Bateham: It seems to me that as well as taking in vegetable gardening, we should get itno plain agricultyre, as long as there is no society for it. There is nothing in the constitution to prevent it. All it needs is the appointment of a committee. I make a motion to that effect.

Dr. Macrum: We provided for this when we arranged for a publicity committee to look after these industries. I understand that that committee had power to expand and to appoint sub-committees.

I think it would be better to centralize this work to one central committee and not have so many sub-committees.

Mr. Washburn: I think an independent committee would serve the purpose better.

Mr. Roberts: Would that publicity committee take hold of the question of securing some recognition before the State Fair Board, and change conditions down there regarding horticulture?

Mr. Bateham: That committee will answer the purpose.

Prof. W. S. Brown: I would suggest that there ought to be more money spent for premiums. In comparison with premiums offered for live stock and other things, those offered for horticultural products are very small. The premiums should be split up into more prizes so as to encourage people to come out for third and fourth prizes as well as for first and second.

Mr. Miller: I would suggest that we give more money for prizes when we know the cost of production. The Fair would be a splendid place to organize that system. I would suggest that they give prizes for certain exhibits and then add ten per cent where those exhibits are accompanied by a certificate of the cost of production. The committee should take up this matter of premiums being offered where they are accompanied by a certificate of the cost of production.

ENFORCEMENT OF OUR HORTICULTURAL LAWS.

By J. W. Pomeroy, Commissioner of Horticulture, First District, Scappoose, Oregon.

Mr. President, Ladies and Gentlemen of the Horticultural Society: I feel especially honored in being invited to speak to your honorable body this morning. I do not wish what I may say to be construed as coming officially from the Board of Horticulture. This would be erroneous. I simply wish to call your attention to some of the work that comes under my jurisdiction, and to conditions as I, as an individual, see them.

One of the great considerations that comes home to every grower of plants or plant products is the necessity of protection against pests and diseases that infest them. In spite of the many different means that may be adopted for the eradication of these pests and diseases, and of the many sources of information at our disposal, we find a large portion of people ignorant of their use and in some cases of their existence, and another portion unwilling to apply that means unless compelled to by law. I want to pause here to remind you that it is necessary that we eradicate these pests and diseases. They must be kept in control if we are to successfully grow plants or plant products. To this end rules and laws have been adopted from time to time to meet the problem as it has made its appearance, and part of the work of the State Board of Horticulture is to enforce these laws and regulations. Upon my assuming the duties of Commissioner of the State Board of Horticulture, I was firm in the conviction that every ordchard in my district would be sprayed at the proper time and that every tree not bringing forth good fruit would be immediately hewn down and that bugs or fungi that played havoc with fruit branch would post haste meet their death or leave for another climate. I was not long in learning, however, that these were the deductions of a fool, and I began to wonder why my dreams of a millenium in that line did not materialize.

I talked with and urged inspectors to action in various counties of my district and became very impatient with some of them because the law had not been enforced in some instances as readily as I had anticipated. It soon became evident to my mind that there were certain localities and districts where law enforcement was an easy task, while in other sections it was next to impossible to get results. It is true we probably would get the conditions remedied partially or in a half-hearted way for one season. This left us the same old routine to go through the next season. As I grappled with this problem, I became more convinced of the truth of what Dean Cordley told me some years ago. He said: "You cannot successfully bring about a reform by force. It must come through a patient and tactful education." I believe this holds true in any line of action. I can remember when it was impossible to enforce the law against boot-legging in my own home town because the majority of people in that place were not conscious of any wrong in the act. Now, however, as a result of a campaign of education, public sentiment has changed to such a degree that a law-breaker would get six months in jail so quick it would make his head swim. I have, therefore, been brought to this conclusion: that a great part of the problem of Horticulture law-enforcing lies, not so much with the officials acting as policemen as it does with the growers themselves. I believe the inspector must be more of an advisor and less a policeman, and must foster and solicit the cooperation of the grower. I find that wherever the sentiment of the majority of growers favor law enforcement we get results that are lasting with no great effort, and these situations prevail only where people can be brought together in some form of organization or meeting, and can be induced to see the actual conditions and its consequence together. In other localities where this cannot be accomplished the commissioners have made no particular effort to enforce the law, believing that they are avoiding a course that would entail large expense upon the taxpayers and bring no satisfactory results from the standpoint of the grower.

There has been considerable criticism levelled at the inspectors because of their tendency to be lenient until the desired education could be accomplished that would result in community effort. It has also been said that our Horticultural laws were not sufficient to cope with the problem. But let me pause here to say that our present code of Horticultural laws are the result of long and patient constructive effort on the part of our best growers and experts in that line, and I am firm in my belief, with what experience I have had, that they are the best code of Horticultural laws yet enacted by any State in the Union. We have power to intercept or eradicate any disease or pest and to carry on any rational program for the protection of our great fruit industry, each County having the authority in proportion to its needs for that purpose, and whether or not these laws are enforced depends to very large degree upon the grower himself. In fact, very few serious problems face us that are not directly the result of the lethargy and lack of interest of those growers themselves, who desire protection. For instance, I have a County in mind in my district where the County officials are opposed to allowing any funds whatever for inspection or advice along that line. These officials are not fruit growers and know nothing of the problems of the fruit grower, and they deny the growers the right to claim any part of the County funds for that purpose. Partly for political reasons, and partly because the inspectors did not begin cutting down people's orchards summarily they were advised that the inspector was not doing his duty. I know that the problems of this County are not the lack of police force, but the lack of practical and expert advice and education. Now, whose fault is this, but that of the growers themselves? All other interests in the County see that their County officials provide for their needs, but the fruit grower has been content to sit and blame the law, in spite of the fact that this is one of the largest fruit growing counties in my district. What the County needs is a practical and scientific advisor first, and a quarantine officer last. Our law provides for any such arrangement. But above all, we want the healthy, wide-awake interest and cooperation of the growers themselves. I wish to say aside here that there has been considerable effort on the part of other States and some in this State to originate and establish uniform Horticultural laws. It is difficult, however, for me to see how this visionary solution can be realized with this State as a factor. Oregon occupies a peculiar position in this matter. Portland being one of the principal ports of entry, much traffic does and will enter here from all parts of the world, whose ultimate destination will be many parts of the United States. When we consider the source of these shipments entering here, it must be clear to us all that Oregon can never repeal or change her present quarantine law with regard to her practice of inspecting Horticultural imports at point of delivery. In fact, any tampering with this law would undo the work of years. There are probably small changes that could be made each year in our Horticultural laws that would simplify and aid conditions, as has been resorted to in the past. But we must keep in mind always the protection of our great and growing plant industry. The impression, however, that I wish to leave with you as I conclude, is that we must in our rational enforcement of our Horticultural laws have your loyal support and cooperation.

Mr. McDonald: If you will permit, I should like to offer a few remarks on Mr. Pomeroy's address wherein he classes Uniform Horticultural Laws as "Visionary."

The old saying that "there are none so blind as those who refuse to see" well exemplifies the position of some of our friends who are opposed to Uniform Horticultural Laws. The Commissioner from the First District does not seem to grasp its true import. I will again try to give you what is meant by Uniform Horticultural Laws.

The parties behind this principle have never asked nor contended that there should be a free intercourse of Horticultural plants or their products without inspection at point of destination when being transplanted from one State to another, but we do contend and maintain that what is necessary for the proper protection of the Horticultural interests of the State is that the basic principle underlying the laws of all the States should be fundamentally the same, and that great benefit and protection would follow if the Horticultural Laws of each of the Pacific Coast States were drawn in the same form giving the same degree of protection to each State, with uniform rules and regulations for the guidance of the inspectors and commissioners of each State, and we further maintain that all parties given authority for inspection and condemnation should first be compelled to pass some form of examination and be made responsible for their actions by being placed under bond.

Uniform Horticultural Laws do not mean any particular form of law, but rather the best law that can be devised to foster, conserve and protect the Horticultural interests of the whole country, honestly enforced by competent trained men.

Why should our friend, the Commissioner, object to or call it "visionary" to have an identical law in force in the State of Oregon, California and Washington enforced under uniform regulations, giving each State the right to inspect all plants and their products at point of delivery? Uniformity does not mean contradiction, but the same thing done in different places in the same way, and whether the present Horticultural authorities in Oregon acquiesce or not, the principle of Uniformity in the Horticultural Laws of the different States is a growing question.

The principle that the men who are interested with the enforcement of these laws, shall pass some form of examination showing their fitness for the work, is also growing and the time is near at home when the people who pay the bills are going to demand that the obsolete, impractical laws of the present be wiped out and the best law that can be devised to meet the needs of the present enacted and enforced with fairness and justice to all of the great allied Horticultural and Agricultural interests of the country.

UNIFORM HORTICULTURAL LAW.

By M. McDonald, President Oregon Nursery Co., Orenco, Oregon.

Mr. Chairman and Members of the Oregon State Horticultural Society—Ladies and Gentlemen:

During the past three years it has been my privilege to present the question of "Uniform Horticultural Laws" before several of the different State Horticultural Societies of the Pacific Coast.

In the beginning of this campaign for more uniform Horticultural Laws, an impression got out that someone was trying to get through a law that would in some way favor some interested parties, but as the discussion of the subject broadened and developed, it became generally known and was so accepted that those originally behind the movement had only the best Horticultural interests at heart, and were only working for the betterment of our Horticultural laws generally.

The purpose in fostering Uniform Laws was, that out of the chaos and contradictions of our present conflicting County, State and Federal Laws, there might be evolved a foundation upon which could be constructed laws for the different States that would be equally fair to all parties whose business, calling or profession caused them to work under such laws, and at the same time be sufficiently broad in their foundation principle that they would, when in operation, adequately protect, foster and conserve every allied Horticultural and Agricultural interest of the whole country.

The originators of the idea of "Uniform Laws" had in mind a better understanding between producer and shipper of Horticultural and Agricultural products on the one hand; and officials and those whose duty it is to enforce laws on the other, and they have been working towards an harmonious cooperation between these parties, together with proper observance and administration of such laws when enacted, because, it should be understood and must be admitted in any discussion about this subject, that the producer, the shipper and the consumer has rights that any properly constructed law should observe and that while giving protection to any one division of the industry, this law should not bear needlessly or unnecessarily heavy upon those who may be engaged in some other department of the same or other business.

Before entering further into the discussion of Uniform Horticultural Laws, it might be well to consider for a moment, our present laws. It is safe to say in their present form they surely do not meet the requirements of present day conditions. I believe an examination of the laws of the State of Oregon, Washington and California and other Rocky Mountain States will disclose the fact that no two of them are constructed along fundamentally similar lines; they are often contradictory one with another, with no standard of enforcement or inspection; often leaving this important work to the judgment and discretion of men without proper knowledge of the work to be performed and often without correct guidance as to the manner in which such work shall be done.

These laws were originally made for conditions entirely different from the present day, and do not meet the requirements of our present complicated interstate shipments, covering, as they do, all Horticultural and Agricultural products moving back and forth from one State to another. Every one of the Horticultural Laws from the different States named have been altered and changed until they sometimes contradict themselves and are wholly impossible of reconstruction along the lines that will meet the needs and bear the burden of the present large interstate traffic of Agricultural and Horticultural products of the country.

I think it is quite generally agreed that our present laws on this subject are very imperfectly drawn and, as stated before, no two of them being constructed along the same lines, what else can be expected except friction and dissatisfaction? If every law on the statute books of the different States on the Pacific Coast were enforced to the letter and every person made to live strictly up to the written law, it would be almost impossible to make a shipment of either Agricultural or Horticultural products from one point to another. Then why have a great mass of legislation that is rarely enforced, and if enforced would cause endless confusion and loss to those engaged in the traffic and distribution of our farm products?

We are all agreed that Horticultural Laws are right in principle and necessary for the proper protection of the Orchard and Farm interests of the country. Then why would it not be good business sense to have a Convention of leading Horticulturists, Farmers, Commissioners and others interested from the Pacific Coast States meet to draft a law that would be broad enough to give ample protection to all interested, and at the same time fill the need and condition of the present?

The foundation principle of all Horticultural Laws should cover the abatement and eradication of all injurious insect pests and bacterial diseases injurious to Horticultural and Agricultural plants and their products.

If when this Convention should arrive at a decision as to what principles a law of this character should cover, it could be incorporated as the foundation upon which would be based the law of each State, leaving it to each State to choose whether the administration of such laws would be carried out under the supervision of a Board of Commissioners, one Commissioner or a Deputy Commissioner under the Department of Agriculture, thus ensuring uniformity of a law for the different States. This, with an agreed standard of inspection so that there would be some assurance that rules of inspection would be applied in each State according to some fixed standard, would give us a workable basis and would add stability, popularity and respect for our Horticultural Laws.

May we hope that some action will be taken at this meeting looking towards a movement of a Convention of interested parties from other States with a view of working out the foundation principle upon which will be built our future Horticultural Laws for the different States of the Pacific Coast.

(Remarks by Mr. McDonald: We should have fundamental principles to our state laws, that would apply to the various states, so that when we ship our produce into California or Washington, we will have some idea of what it will have to be when it gets there. A man now has to hire a lawyer to find out what kind of a law they have in some other state.

Prof. Lewis: I am chairman of the American Pomological Society that had charge of this matter, and I have conferred with the Pacific Coast Nurserymen and the National Association of Nurserymen, and we are trying to work together. I believe that we will have to take steps to have more uniform laws, either state, or possibly national. I believe there is too much sectional jealousy, especially among the Pacific Coast states on this subject.

Mr. Williamson: It is wise to take into consideration those laws that affect shipments within the state and those outside; but under present conditions, the efforts to secure uniform laws for the entire states of the Union, is going to be a waste of energy. I am satisfied that it will be many years before we get the leading fruit growing sections in Orégon or California or Washington to concede to any law which allow nursery stock to come from any state in the Union and be delivered without local inspection. We have many jealousies between Oregon, Washington and California, and the question is how we are going to get rid of them. A vast portion of the troubles which affect nurserymen could be done away with if we could have all federal government inspections as to shipments. I would favor a committee to secure uniform horticultural laws. In the meantime, we ought to know what we are going to change in our own laws. What we want repealed. It is not necessary to abolish the system of laws we have in Oregon, but change the machinery without materially changing the body of our laws.

As to the mattter of enforcing the law. Do we want inspection done under one centralized system? Do the fruit growers want the inspection work directed from a central point, or controlled to some extent in their own neighborhoods? There is much to be considered on both sides. If we are going to change the machinery, can we get the required amount of money for a centralized system?

I move that the society go on record as favoring national inspection of all agricultural and horticultural products for interstate shipment.

Mr. Roberts: I second the motion.

Motion was carried.

Mr. Roberts: Our fruit growers endorsed the law as represented to this society at Medford. and it was sent down to California and was largely endorsed there and then it went to the Oregon Legislature, and I think I was about the only fruit grower to show up regarding that law. When I went down there to talk about it I found the impression prevailed that I was there for purely personal interests—that I was trying to hold the position I was in, or was trying to secure another—and the very men behind that movement were members of the State Board of Horticulture.

Upon motion of C. D. Minton it was decided that the Society meet in the office of Mr. Williamson, Portland. Nov. 22, 1915, to ratify the action of the meeting of the Society at Corvallis.

A vote of thanks was unanimously extended to the students of the Oregon Agricultural College for their very excellent and wonderful exhibit.

Resolved, That the thanks of the members of the Oregon State Horticultural Society be extended to the faculty and students of the Oregon Agricultural College for the cordial invitation extended to hold the thirtieth annual meeting in the city of Corvallis.

That the Society express its appreciation of the efforts of the faculty of thte Oregon Agricultural College to make the annual meeting a success by their attendance at the proceedings and by their addresses, papers and discussions during the daily sessions.

That a vote of thanks be extended to the Corvallis Commercial Club for their entertaining the Society, and to the citizens of Corvallis in general for their hospitality extended to the members of the Society.

President Washburn: While some things have been said during this meeting to discourage us, yet on the whole, we are more optimistic than we were when we came here. I do not think for a long time we need worry about the matter of over-production. The marketing question is very important, and we are certainly gaining in solving these problems. If we fruit growers stand together, there is no such word as fail.

The motion was made and seconded to adjourn, to meet in the office of H. M. Williamson, Nov. 22, 1915.

Portland, Oregon, Nov. 22, 1915.

The adjourned meeting of the Oregon State Horticultural Society met in tthe office of H. M. Williamson in the Commercial Club Building. Upon motion of A. P. Bateham, seconded by F. W. Power, all of the business of the meeting held at Corvallis, Nov. 16, 17 and 18, was affirmed and all of the officers recommended at that meeting as the officers of the coming year, were declared elected. There being no further business, upon motion of C. A. Macrum, the meeting adjourned.

The following members were present: C. D. Minton, R. C. Washburn, E. C. Roberts, H. M. Williamson, A. P. Bateham, C. A. Macrum, M. McDonald, F. W. Power, Albert Brownell.

THE AUCTION SYSTEM OF MARKETING BOX APPLES.

By Arthur M. Geary.

(This paper arrived too late to be read at the meeting.—Sec'y.)

It is becoming increasingly apparent to all that the apple growers of the Pacific Northwest face a problem of marketing that must be met squarely or continued disaster endured. A comprehensive scheme of marketing must be agreed upon by the different shippers and then adhered to. Efforts of shippers, large and small, to develop markets for Northwestern box apples throughout the Rocky Mountain district, in Texas and the rest of the South, and in the small cities and towns of the Middle West and East, are bringing results and should be put forth with renewed energy and thoroughness. The large associations and selling agencies are doing a splendid work in developing foreign markets. I have no suggestions to offer as far as these lines of endeavor are concerned.

It is my opinion, however, after going from city to city and watching the sales and talking with all sides of the marketing business, that the shippers will have greater control of the marketing of their apples and that the fruit will obtain wider distribution at less cost, when the auctions of a number of the largest cities become the regular marketing places for box apples in these particular localities, as they are now for lemons, oranges, pears, plums, peaches, cherries and grapes.

It is very apparent, however, that there will be just as much need of strong shipping organizations under the auction system, the larger the better, with clear headed agents in every market as there is at the present time. The only difference will be that the field of activity of these agents will be broadened—they will deal with the small jobbers, and large retailers as well as with the large jobbers.

Of the several hundred interviews that I have had and am having with jobbers, auctioneers, brokers and agents, the testimony of the agents of the shipping organizations who are using both public sale and private sales, especially convincing. When you find four out of five of such men eager for their organizations to aid in making the auction the regular marketing place for box apples in a number of the largest cities, you have testimony of experts who should be unbiased.

In this paper, I will briefly point out facts, which indicate that neither the private sales system nor the auction is getting an opportunity to operate to the best advantage. The private sales system is not, because the apple industry of the Northwest has outgrown that method as far as the largest cities are concerned. The auction system, on the other hand, is not bringing the best results, because regular supplies are not to be sold in that way.

Some of my statements and inferences may be questioned in this convention. I regret that it is not possible for me to take part in the discussion of the paper and only hope that when a like meeting is held again that I will be on hand with added knowledge of the situation in the different auction markets. I am not in the employment of the auction companies or of any marketing organization at this time and so responsibility for the ideas expressed is my own.

Before the apple industry reached its present proportions, a few large firms of apple jobbers, located in New York and Chicago, were able to come to the Coast and pay the grower a good price for his product and still realize a handsome profit upon his investment by selling the fruit at sky high prices to the extreme wealthy of the great cities of this country and to the nobility of Europe.

As the production of apples in the Northwest doubles and triples, the speculators who are willing to invest their money each Fall in box apples, are becoming fewer. Through losses endured, those who are still in the business are becoming more cautious in their investments and are not offering the prices that made apple raising so attractive a few years ago.

From the viewpoint of these speculators, they were treated shamefully; but, as a matter of fact, the box apple industry simply outgrew their method of handling. After the shippers sold these speculators all the apples that they could, the rest were consigned, quite generally, or at least were put upon the market so as to prevent the speculators holding up the price of apples to the heights that would net them the profits that they were accustomed to receive.

When all avenues at private sale failed and the apples arrived at such a stage that they had to be sold at once, carloads of them, during the last few years, were dumped upon the auctions. Because the prices received at the auctions are made public and all can learn what they are, these sales of defective apples at auction have been demoralizing. Some cars of first class apples have been put upon the auction markets, but, with few exceptions, only because satisfactory arrangements could not be made at private sale.

Shippers must of necessity use the auctions whenever the avenues at private sale offer them no outlets. The large apple crop of 1914 clogged all avenues of private sale and forced cars into the auction. The larger crops of the future, despite all efforts that may be put forth, will not find outlets unless the auctions are used.

I do not believe that there is a man, who is well informed concerning the eastern markets, who does not believe that box apples will have to be sold at auction to a certain extent in the future. We must use the auction—therefore, we should use it systematically. The auction system will not give the best results when it is used occasionally and only for a small portion of the supplies of a certain market. The apple shippers are the only ones that are misusing the auction in this way. The California Fruit Growers' Exchange and the California Fruit Distributors and the Florida Citrus Exchange either sell all of the fruit that they furnish a certain city through the auction, or sell all of it at private sale through jobbers. The two systems cannot be worked together satisfactorily in any one market.

The shippers referred to above sell at private sale to jobbers in the small cities and in cities where they are not satisfied with the auctions and sell through the auctions exclusively in 12 or 13 cities, where the great auction clearing houses have been built upon a satisfactory basis. The Northwestern box apple shippers should follow the example of the Californians and Floridans in this respect.

There are hundreds of little jobbers in the large cities of the country, who do not deal in box apples, because they cannot procure their supplies at the auctions where they get the other fruits. They object to paying a profit to their large rivals, who not only sell to them, but to their customers. The proper use of the auctions would result in these jobbers, who buy in less than carload quantities, going to work for the Northwestern box apple grower.

Apples do not have to be sold at any old price when they are offered at auction. It is the shipper's privilege to withdraw all but 20 boxes, if the highest bid placed upon the fruit is not satisfactory. Also, a minimum price can be set before the bidding begins, in which case the whole car can be withdrawn from the sale if the minimum price set is not offered.

Most of the auction companies charge from one and a half per cent to three per cent of the gross selling price for their services, which